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# IMPROVEMENTS IN THE TREATMENT OF CANCER OF THE RECTUM

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BOSTON

Within the past few years there has been definite and important progress in the management of cancer of the rectum. The fundamental principles underlying the successful treatment of this condition have long been established as regards both palliative procedures for temporary benefit and the curative or radical operations that give some encouraging prospect of relief. An understanding of the extension of cancer of the rectum beyond the primary site soon led to better results. The earlier observations, of W. Ernest Miles,[1] but recently reviewed by him, led to the general acceptance of the abdominoperineal resection as the ideal operation. The operation for cancer of the rectum must attempt to remove the involved rectum, an appreciable portion of bowel above and below the lesion and as wide an excision of mesentery and pelvic contents as possible. With this in mind, I strongly believe that the most radical operation should be performed which is consistent with the patient's condition and which offers a reasonable chance for survival. It is the application of this principle—utilizing the correct operation for the individual patient—that has resulted in better results during the past few years.

It is my purpose to discuss the changes in the management of these cases in recent years which has led to the successful treatment of an increasing number of patients with cancer of the rectum in order to bring these facts before the physicians who first see these patients. The discussion in this paper will be limited to carcinoma of the rectosigmoid and rectum, since the lesions in these locations properly should be considered together, because of similarity of position, blood and lymphatic circulation.

In 1934-1935, 106 patients with cancer of the rectum were treated at the Lahey Clinic, of whom I operated on 80 per cent. Dr. Frank H. Lahey and I[2] reported a previous series of 124 cases treated from 1928 to 1933. The experience gained from the treatment of these 230 patients will be the basis for this discussion.

It must be conceded at once that the greatest prospect of cure of cancer of the rectum will follow the surgical treatment consisting of an adequately radical resection. Although definite progress has been made in radiation therapy alone or in conjunction with surgery, the efficacy of this method of treatment probably cannot yet be evaluated. Since the fundamental principles underlying the correct operative treatment for cancer of the rectum have not changed, recent progress has been most evident in the modification and application of these principles. The improvement in the management of cancer of the rectum can be logically divided for discussion into four heads: (1) early diagnosis, (2) preparation of the patient for operation, (3) operation and (4) postoperative management.

## EARLY DIAGNOSIS

It is logical to assume that, with the increasing interest in the treatment of cancer of the rectum in particular, the diagnosis in patients having this condition will be accomplished earlier. A study of the cases observed and treated at the Lahey Clinic from 1923 to 1933 demonstrates clearly that this is not the case. In spite of repeated articles in the recent medical literature dealing with the early as well as with the late symptoms of this disease and with the educational measures carried out to inform the public, a large proportion of the patients who come to the surgeon for treatment have already had symptoms for nine months or more. While this does not exclude the possibility that many of these patients still have a prospect of cure, certainly the number of patients with extension beyond the local area of the bowel wall is considerably increased by this delay. If there is to be further improvement in the results from adequate treatment, it must largely result from the recognition of the earliest symptoms of the disease. It is no doubt true that the lesion is present for some weeks or even months before it produces enough symptoms to call the patient's attention to possible trouble. While it will be necessary to continue general educational measures to make the public aware of the possibility of this lesion, the most important thing at present is to be certain that the physician who first sees the patient recognizes the possibility of malignancy of the large bowel. If he is constantly aware of the frequency of the lesion, either he can carry out the necessary measures for establishing the diagnosis or he can refer the patient for these necessary examinations. A discussion of the symptoms of cancer of the rectum and rectosigmoid cannot be presented in this paper, but the steps in establishing the presence or absence of a malignant lesion in this location should be discussed briefly.

In an analysis of our total group of 525 cases of cancer of the colon and rectum, approximately 55 per cent were found in the rectosigmoid and rectum. The importance of a careful rectum examination is at once evident. A large proportion of these lesions are within

From the Lahey Clinic.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

1. Miles, W. E.: Postgraduate Surgery, New York, D. Appleton-Century Company, 1936, p. 1428; Surg., Gynec. & Obst. **52**: 350 (Feb., No. 2A) 1931.

2. Cattell, R. B., and Lahey, F. H.: New England J. Med. **210**: 403 (Feb. 22) 1934.

reach of the examining finger and a positive diagnosis can be established by the experienced examiner by this simple measure. In all patients with a suggestive history of this condition, the rectal examination should be followed by a visualization of the area by anoscopic, proctoscopic and sigmoidoscopic examinations. The use of the sigmoidoscope should be routine in every patient presenting bowel symptoms and is just as important as the barium sulfate enema for the demonstration of lesions in the colon above the area of the rectosigmoid. It should be emphasized that the possibility of carcinoma of the rectosigmoid is not eliminated in patients in whom anorectal disease is discovered. It is common knowledge that a considerable number of patients with carcinoma of the rectum and rectosigmoid have had recent local treatment or operation in the anorectal region. It seems evident from this brief discussion that there has been little progress in recent years in bringing a patient with carcinoma to the surgeon at an earlier time. Yet it is in this part of management of cancer of the rectum that the greatest possibility of progress is presented.

The cause of carcinoma of the rectum is, of course, unknown; yet a large amount of evidence has accumulated as to the rôle of mucosal and adenomatous polypi in the development of carcinoma of the rectum. We have had the opportunity to observe repeatedly the transition of polypi into a definite malignant condition of the rectum. The frequent occurrence of malignancy in multiple polyposis of the colon is well recognized. Multiple malignant growths of the large intestine have occurred several times in our series of cases and it is

TABLE 1.—*Operability of Cancer of the Rectum*

| | 1934-1935 | | 1928-1933 | |
|---|---|---|---|---|
| Resections | 78 | 73.6% | 66 | 53.2% |
| Palliative operations | 28 | 26.4% | 58 | 46.8% |
| | 106 | 100.0% | 124 | 100.0% |

a common finding to discover in the resected segment one or more rectal polypi in the rectosigmoid and rectal segments in addition to the carcinoma for which the resection was done. With the frequent use of the sigmoidoscope these polypi will be discovered at a time before they produce symptoms, and this offers a definite means of reducing the incidence of carcinoma of the rectum if they are vigorously and properly treated. It is my opinion that any polyp irrespective of size or benignancy should be immediately treated by fulguration with subsequent follow-up examinations to show that the mucosa remains smooth over this area. This definitely precludes the development of carcinoma of the rectum from that cause. The discovery of a single polyp should make one definitely suspicious that polypi may be present higher in the colon, and in all these cases the barium enema and double contrast enema should be employed.

## PREPARATION OF THE PATIENT

Considerable attention has been paid in recent years to measures that will best prepare the patient for operation, and these have definitely resulted in a lower operative mortality and a lower incidence of serious complications. These measures can be roughly divided into those having to do with the general condition of the patient and with the local condition of the bowel. Many of the patients with cancer of the rectum have lost considerable weight, have a depleted glycogen reserve and have evidences of dehydration and anemia. The preoperative utilization of a high caloric, low residue diet and the administration of a large amount of fluids, salt solution and subcutaneous and intravenous dextrose are of great value. Blood replacement by transfusion should be carried out in the anemic patients. Measures for the relief of obstruction are extremely important, since patients with this condition do not tolerate major surgical procedures well. In the absence of complete obstruction the entire intestinal tract should be emptied by a saline purge, and barium in the colon should be removed by enemas and colon irrigations.

The importance of an adequate preoperative preparation and decompression of the colon in these patients has been emphasized by Rankin,[3] T. E. Jones,[4] Bargen,[5] Abel [6] and others. Undoubtedly, careful attention to this point has permitted a one stage operation to be performed in many patients who otherwise would have required a two stage resection. In cases in which barium has been given by mouth or as an enema, it is advisable to take a flat plate of the abdomen to make certain that the barium has been successfully removed. A long preoperative period of preparation in the hospital is probably not necessary, but sufficient time should be taken to insure getting the patient in the best condition possible before operation. The use of intraperitoneal vaccination will not be discussed, since I have had no experience with it.

## OPERATION

The greatest progress in the management of cancer of the rectum in recent years has probably been made in the better selection of the type of operative procedure for the individual patient as well as in the proficiency of carrying out the elected operation. Patients with carcinoma of the rectum are frequently poor operative risks and a prohibitively high operative mortality may result if a radical abdominoperineal resection in one stage is carried out in a routine way. It must be admitted that the ideal operation for every cancer of the rectum from the standpoint of the greatest number of possible cures would be the abdominoperineal resection in one stage. At present in this country there is a decided trend toward the utilization of this operation more than any other. If this trend continues and the operation is generally utilized, there is little doubt that a high mortality will result. It is for this reason that we feel it important to sound a warning against the routine adoption of this operation. In the hands of surgeons who have had considerable experience in the operative treatment of cancer of the rectum the mortality may be kept within reasonable limits, but in the hands of a surgeon who has the opportunity of doing only an occasional operation of this type it will be safer to employ other operations.

In the group of 106 patients operated on in 1934-1935 (table 1), seventy-eight were submitted to resection, an operability rate of 73.6 per cent. Twelve (15.4 per cent) abdominoperineal resections were done in one stage (Miles operation, table 2). In the earlier series of 124 patients, sixty-six were submitted to resection, an operability rate of 53.2 per cent. In this group five one stage operations were done (7.6 per

3. Rankin, F. W.: The Curability of Cancer of the Colon, Rectosigmoid and Rectum, J. A. M. A. **101**: 491 (Aug. 12) 1933.
4. Jones, T. E.: Surg., Gynec. & Obst. **62**: 415 (Feb., No. 2 A) 1936.
5. Bargen, J. A.: Mod. Hosp. **41**: 69 (July) 1933.
6. Abel, A. L.: Proc. Interstate Post-Grad. M. Assembly, 1931, p. 296.

cent). It will be noted that the number of one stage abdominoperineal resections has doubled but is still applied to but one sixth of the patients submitted to resection.

There is a small group of patients with the lesion high in the rectosigmoid but too low to permit a Mikulicz resection, on whom an anterior or abdominal resection has been done as a one stage operation. In these cases a small stump of rectum is left in situ below the reconstructed pelvic peritoneum. It is possible to resect sufficient bowel below the lesion to prevent recurrence in this lower segment. We have felt it advisable to drain the presacral dead space by a drain brought out alongside the coccyx. This operation is limited to good risk patients with a high rectosigmoid carcinoma. In our earlier series eleven (16.7 per cent) anterior resections were done, but in the latest group four (5.1 per cent) were operated on by this plan (table 2). It is in this group of cases that the one stage abdominoperineal resection has been extended. In a comparison of the two series, as seen in the table, it will be noted that decrease in the anterior resections has led to the same relative increase in one stage abdominoperineal resections.

TABLE 2.—*Types of Operation*

| | 1934-1935 | | 1928-1933 | |
|---|---|---|---|---|
| One stage abdominoperineal (Miles)..... | 12 | 15.4% | 5 | 7.6% |
| Two stage abdominoperineal (Lahey)... | 48 | 61.5% | 33 | 50.0% |
| Anterior (abdominal)..... | 4 | 5.1% | 11 | 16.7% |
| Posterior..... | 13 | 16.7% | 16 | 24.2% |
| Other..... | 1 | 1.3% | 1 | 1.5% |
| | 78 | 100.0% | 66 | 100.0% |

I believe that some modification of the abdominoperineal resection in one stage should be used in a majority of these cases. The two stage operation utilized in this clinic described by Dr. Frank H. Lahey [7] in 1929 and later modified by me [8] possesses distinct advantages. The most enthusiastic proponent for the one stage abdominoperineal resection will admit that there are a considerable number of patients in whom the operation is not applicable. Patients with a lesion of borderline operability because of local extension, inflammation and possible abscess should be operated on by one of the two stage types of operation. It is my opinion that most of the patients of 55 years of age and upward go through the operation with less danger and trouble when the two stage operation is employed. In our earlier series, 50 per cent (thirty-three) of the resections were two stage abdominoperineal operations (Lahey), but during 1934 and 1935 61.5 per cent (forty-eight) were operated on by this method (table 2). The increase in the number of two stage abdominoperineal resections is due to extending the indications for operability to include less favorable cases, as shown by the increase of the operability rate from 53.2 per cent to 73.6 per cent.

There is a further group of poor risk patients that cannot reasonably withstand the radical abdominoperineal resection in either one or two stages. These patients, because of cardiovascular disease, obesity, advanced years or general debility, should be submitted to a more local type of resection, particularly if the lesion is located in the lower segment of the rectum. This operation, first described for the excision of carcinoma of the rectum by Kraske and later modified by a number of surgeons, still holds a very useful place. It must, of course, be done in two stages with the first stage consisting of a double barreled or loop colostomy, the rectum subsequently being removed through a perineal incision. In 1934-1935, thirteen (16.7 per cent) posterior resections were performed. This should be contrasted with sixteen (24.2 per cent) resections of this type in the earlier series (table 2). This decrease is entirely due to the utilization of the more radical two stage abdominoperineal resection in some of the poor risk patients.

In earlier series but 30 to 50 per cent of the patients were submitted to some type of resection. There has been definite progress made in increasing the number of patients submitted to resection. In this clinic before 1930 the operability rates averaged from 50 to 55 per cent, varying but little during this entire period. With the decrease in the operative mortality, it was felt justified to submit an increasing number of patients to a radical operation that would have previously been rejected. During the last three years the operability rate has risen and remains above 70 per cent of all the patients observed. This general trend, we believe, is evidenced by the figures of D. F. Jones,[9] Abel,[6] Rankin,[3] T. E. Jones,[4] Hayden and others.

With an increase in operability above 70 per cent, it is of interest to consider the extent of the malignancy in the seventy-eight cases of resection. In six cases the lesion was adherent or invading the bladder, vagina or pelvic organs. Twelve were so extensive that no hope of cure was present and the operation was considered a palliative resection; in four of these there was perforation of the malignant process with abscess. Twenty-five patients were demonstrated to have glandular metastases. It will thus be observed that forty-three (55 per cent) were definitely in the unfavorable group.

The operative mortality in both series of cases is presented in table 3. It will be seen that the mortality remained about the same (from 13 to 15 per cent), although the operability rate was raised from 53.2 per cent to 73.6 per cent. The total mortality in all cases considered for resection is presented, although four patients in each group died following colostomy alone. In our experience the mortality after colostomy in both operable and inoperable cases will be higher than in cases in which resection is done. The mortality after resection in the two series was 8.1 and 10.8 per cent.

TABLE 3.—*Operative Mortality*

| 1934-1935 | | | 1928-1933 | | |
|---|---|---|---|---|---|
| | Deaths | Per Cent | | Deaths | Per Cent |
| 78 patients..... | 12 | 15.4 | 66 patients..... | 9 | 13.6 |
| 74 resections*..... | 8 | 10.8 | 62 resections†..... | 5 | 8.1 |

* Four deaths after colostomy in resectable cases.
† Four deaths after colostomy in resectable cases.

The operative treatment for carcinoma of the rectosigmoid and rectum should properly be divided into palliative and curative or radical operations. There is little reason to discuss in this paper the palliative operation of colostomy in the inoperable cases of carcinoma of the rectum, since there has been no progress made. The use of radium and x-ray therapy in these cases, particularly following colostomy, has doubtless proved

7. Lahey, F. H.: Surg., Gynec. & Obst. **51**: 692 (Nov.) 1930.
8. Lahey, F. H., and Cattell, R. B.: Am. J. Surg. **27**: 201 (Feb.) 1935.
9. Jones, D. F.: Ann. Surg. **94**: 860 (Nov.) 1931.

of benefit in some of these patients. I feel, however, that radium and x-ray therapy should be used only in the inoperable cases and believe firmly that every patient with a carcinoma of the rectum, no matter how early, should have a radical resection. The use of radium and x-ray therapy alone and in conjunction with surgery has recently been summarized by Shedden [10] and Binkley.[11] Unquestionably, definite progress has been made, and as a better understanding of the methods and dosage is obtained by an increasing experience, they may prove of more help than they are credited with at present. Radiation therapy may increase the patient's comfort by decreasing the amount of discharge, thus relieving rectal discomfort and tenesmus, and by decreasing the size of the lesion, thus helping to relieve pain in the pelvis and in the sciatic nerve distribution.

Mention should be made of the local treatment of early carcinomatous lesions by fulguration or cauterization. Certainly this procedure is still in the trial stage, but it offers little prospect of any encouraging success. An excellent argument against local coagulation evidenced itself in a patient who recently came to the clinic because of tinnitus, with no rectal bleeding or other symptoms. During routine physical examination the digital examination revealed a small elevated area but 2 cm. in diameter on the posterior rectal wall 2 inches from the anus. On proctoscopic examination it did not appear ulcerated but bled easily on manipulation. Biopsy showed malignant adenoma. Local coagulation was considered but rejected and a one stage abdominoperineal resection was carried out. Two glands involved with metastatic growth were found in the resection specimen at some distance away in the mesentery. Radical operation offered this patient a definite chance for cure, while local excision by any means or local coagulation precluded any chance for cure. We feel that coagulation should be limited entirely to the inoperable group of cases.

By increasing the operability rate in patients with carcinoma of the rectum, it must be admitted that resections must at times be carried out in definitely unfavorable cases. Patients should not be submitted to the risk and disability of resection unless there is a reasonable prospect of their continuing to live with a fair degree of comfort for eighteen months or two years. I feel justified in resecting the primary growth in patients with early metastases to the liver if their general condition is good. In patients with local extension of the growth in the pelvis, I believe that resection should be done whenever it is technically feasible to carry out the operation. It is in this group particularly that the two stage abdominoperineal resection is applicable. As the number of unfavorable cases in which resection is done is increased, the percentage of five year cures must logically be decreased. Nevertheless the operative mortality and recurrence rate must not be the paramount factors in determining the cases in which resection should be done. The principle of giving patients the greatest number of years of comfort and usefulness should be the guiding motive here in the application of the radical removal of the growth without regard to the mortality rate, recurrence rate or ultimate death from the neoplasm.

Resection of the presacral nerve during the course of operation for carcinoma of the rectum is easily done in the unfavorable cases. This is a recent surgical development and, I feel, has definitely contributed to the comfort of patients postoperatively, particularly those with local extension into the pelvis involving the bladder. Resection of the presacral nerve is a relatively simple procedure at the time of an abdominoperineal resection, since the entire area involved has been denuded of the peritoneum in carrying out the resection. It is suggested that this procedure be carried out as a routine in unfavorable cases, even those in which only colostomy is justified.

Definite progress has been made in anesthesia for cancer of the rectum. With an increasing experience with radical resection, the time necessary for performing the operation has been brought within the time of a satisfactory spinal anesthesia. Spinal anesthesia is now employed as a routine in all the better risks. The use of metycaine and nupercaine, the latter in dilute solutions, rather than procaine, has permitted a longer period of spinal anesthesia to be given with the same degree of safety. Ethylene or cyclopropane can be used if necessary to complete the perineal portion. The operative conditions produced by spinal anesthesia have permitted the surgeons to carry out the work under direct vision more expeditiously and more safely than under a general ether anesthesia. The poorer risk patients are advantageously operated on under a cyclopropane general anesthesia and field block of the lower abdominal wall. Better anesthesia has in these cases been a convincingly important factor in the reduction of the operative mortality.

### POSTOPERATIVE MANAGEMENT

The immediate postoperative care of these patients aims to combat shock, prevent infection and offer general support to the patient. Transfusions should be given as a routine following the resection. The incidence of peritonitis in these cases has been markedly reduced by the two stage measures discussed earlier in the paper and is of infrequent occurrence. It may unavoidably result from a technical complication such as rupture of the growth during removal or separation of the pelvic peritoneal diaphragm during the postoperative period. Pulmonary complications, particularly postoperative pneumonia, infarct and massive pulmonary emboli, are still the major fatality factors to be overcome. In our group of patients postoperative urinary infection is very common as the result of manipulation of the urinary tract and sagging of the bladder into the hollow of the sacrum, with the resulting stasis and infection. All patients are placed on constant bladder drainage for from seven to ten days following operation to combat this. Bladder irrigation and occasional pelvic lavage by cystoscopy are necessary in many of these patients during their postoperative convalescence.

Patients operated on for cancer of the rectum should be carefully followed over a long period of time. A careful and frequent follow-up examination permits the early discovery of local recurrence at a time when further treatment may be of benefit. It is the surgeon's duty to instruct and train the patient in the management of the colostomy. Great progress has been made in this particular. By means of diet and colostomy irrigations in most cases the objectionable bag and apparatus can be discarded.[12] If the colostomy is managed satisfactorily, it should in no wise interfere with the patient's carrying out a useful occupation. In

10. Shedden, W. M.: Am. J. Roentgenol. **34**: 498 (Oct.) 1935.
11. Binkley, G. E.: Ann. Surg. **102**: 72 (July) 1935.
12. Cattell, R. B.: New England J. Med. **208**: 740 (April 6) 1933.

former years the management of the colostomy was left entirely to the patient's devices, was extremely unsatisfactory and resulted in much of the objections to the acceptance of a colostomy by patients.

In the presence of a recurrence, radiation therapy has a real place. The implantation of radium seeds and adequate x-ray therapy definitely increases the duration of life of these patients as well as contributes to their comfort. With persistent pelvic pain or pain in the lower extremities, the subarachnoid injection of absolute alcohol, which is a recent development, offers definite relief.

In recent years there has been an earnest effort to carry out careful follow-up studies and evaluation of results following the operative management of cancer of the rectum. This must be continued in order to evaluate properly the place of surgery in the treatment of this condition. Likewise, an analysis of the results following radiation therapy must be considered.

In considering the recent progress in the management of cancer of the rectum and rectosigmoid, what results can be expected with the use of the present method? The patient with early and favorable carcinoma of the rectum has every reasonable prospect of cure. Certainly, the results obtained by the present methods of treatment are as good as for carcinoma elsewhere in the body. In considering all patients who have been submitted to radical resection in our series of cases, 42 per cent have been free from recurrence for five years. There is little prospect of improving this figure until progress is made in the earlier recognition of this condition, so that the radical operation can be carried out at the most favorable time.

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## ABSTRACT OF DISCUSSION

DR. FRED W. RANKIN, Lexington, Ky.: I endorse the principles that Dr. Cattell has enunciated with the one difference that after a good many years of advocating the radical two-stage operation, I have at last joined those who believe that the one-stage combined abdominoperineal resection is preferable. The greatest advance in the treatment of cancer of the rectum during the past decade has been the preliminary preparatory period. No experienced surgeon would undertake an operation for cancer of the rectum without a period of preliminary decompression and rehabilitation. In my service this period of preliminary preparation has been extended to at least seven days and longer in the more devitalized and debilitated patients. A second change in my practice is the abandonment of preoperative intraperitoneal vaccines. So far as vaccination by a vaccine of streptococci and colon bacillus is concerned, I am convinced that my own enthusiasm did not warrant the interpretation I put on the end results. All can agree with Dr. Cattell that there is no one standardized type of procedure applicable to all cases. These cases come to the Lahey Clinic averaging a little more than nine months of symptoms, during which time the patient has known of the presence of cancer. In my series the length of time is a little longer, ten and one-half months. The patient is usually a devitalized, dehydrated individual of middle age who should be submitted to a radical operation if he can stand it, but necessarily many of these patients cannot be operated on by any one type of procedure. My average operability rate has ranged around 60 per cent. In the last eight years it has not gone below 52 per cent. About two out of three patients were subjected to resection, and that included the 10 per cent of cases presenting a movable growth that is resectable but with early metastases into the liver that Dr. Cattell spoke about. I think they should be given the benefit of a resection because a liver death is much more preferable to a death from intestinal obstruction. I found myself doing fewer of my own operations and doing more of the Miles operation while, for the group which seemed too feeble for a radical procedure, the colostomy and posterior resection of Mummery was preferred. The principles of radical surgery should be applied to cancer of the rectum. With a more careful preparation and more meticulous technic the one-stage operation can be utilized in most cases in which the radical procedure is indicated. There is a small group of cases in which one may use the two-stage operation, either my own or Lahey's or some one else's, but I don't think that we will ever get away from the less radical operation of colostomy and posterior resection in certain cases.

DR. WILLIAM D. HAGGARD, Nashville, Tenn.: By and large throughout the country the great majority of cases of cancer of the rectum are not presented to the surgeon under a year. In cancer of the rectosigmoid about one third of the patients have acute obstruction when they are brought to the surgeon. That is the most severe indictment as far as early diagnosis is concerned. It is all important, in doing a colostomy for obstruction, to bring the cecum entirely out under a glass rod so that one can adequately handle and drain it. The second great essential is the avoidance of even an examination of the lesion itself, because it is waterlogged and reeking with micro-organisms. In enthusiasm and zeal to determine the location and type, one will literally squeeze micro-organisms into the peritoneum and cause the tremendous death rate from peritonitis. The diagnosis can be made ever so easily by a barium sulfate enema after the patient recovers from the acute obstruction. The risk of death for obstruction from cancer is rarely 50 per cent. It should have been used long before. In suspected cases of cancer of the rectosigmoid, because of changes in bowel habit, either constipation or diarrhea, or alternating, with or without blood, one should use the barium enema. In cancer of the ampulla fortunately the great majority of cases can be diagnosed by simple digital examination, which should be regularly done as an essential part of every general examination. I regret to say that medical men and surgeons do not employ it as a routine. I have had the mortifying experience of operating on a patient for other lesions, such as a goiter, and some months afterward have been chagrined to see the patient return with symptoms of carcinoma of the rectum, which was present before. In determining the curability of cancer, lymphatic extension is the deciding factor. Some recent work by Gabriel, at St. Mark's Hospital, has shown that in cancer of the rectum the extension is always upward, and that in about half of the cases the extension to the lymph glands is below the point where one divides the mesentery including the superior hemorrhoidal artery. That is encouraging. It rarely extends laterally or downward until the entire lymphatic chain is blocked. Therefore it should hearten one to think of the suggestion made by Gabriel with regard to those high lying carcinomas of the rectosigmoid that one could, in a small group of cases that might perhaps be enlarged, by early diagnosis, do a resection of the rectosigmoid area including the carcinoma and its tributary glands leaving the sphincter.

DR. RICHARD B. CATTELL, Boston: I must confess that we have been embarrassed during the past few years by the repeated questions regarding intraperitoneal vaccine. In fact most of our visitors ask "Has this patient had intraperitoneal vaccination?" We have always been hesitant to employ it and have had no experience with it because we were afraid to induce a high fever in a debilitated patient a short time before doing a major operative procedure. Dr. Rankin has performed an important service in clarifying this matter before this section. We do no sphincter-saving operations and consequently employ only one of four types of operative procedures, the one-stage abdominoperineal, the two-stage abdominoperineal, the anterior abdominal resection, and the posterior resection. Dr. Haggard brought out a very important point with regard to Dr. Rankin's figures. I am sure that most of us are in agreement with Dr. Rankin that the one-stage abdominoperineal operation is ideal, particularly in the exceptionally good risk; but the point that Dr. Haggard made was that approximately 50 per cent of Dr. Rankin's patients were operated on by the two-stage loop colostomy and posterior resection, which demonstrates clearly that Dr. Rankin agrees as to the value of the two-stage operation. I wish to say a word about colostomy. There is no way with which we are familiar that a colostomy can be constructed so as to have a satisfactory

sphincteric action. The colostomy merely provides an outlet for the intestinal flow; nevertheless I feel that the colostomy can be successfully managed; certainly in a large proportion of the cases and in all the intelligent patients, with rare exceptions, it will move only at a time when they wish it to move. This is done first by means of the diet, secondly by irrigations of the colostomy, and thirdly by doing it at the same time of day each time. If all surgeons had the opportunity of listening to the stories that these patients tell one, five, seven or eight years after operation, who are managing their colostomies successfully, they would not be hesitant in applying radical surgical principles to cancer of the rectum, which involves the formation of a permanent colostomy.

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# THE BLOOD PICTURES IN THE PRIMARY DISEASES OF THE LYMPHATIC SYSTEM

## THEIR CHARACTER AND SIGNIFICANCE

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The lymphoid structures may properly be considered as a part of the hematopoietic tissue of the body, since they contribute to the blood stream about 25 per cent of the white cells contained therein. Unlike the bone marrow, however, the lymphoid tissue has a local office to perform in addition to the general one of supplying cells to the circulation. This necessarily results in the separation of the diseases that affect the lymph nodes into two categories: those in which only a local reaction occurs and those in which the general lymphatic reaction is invoked. The latter group, often spoken of as the primary lymph node diseases, represents disorders, all of which are of unknown etiology and often of uncertain pathology, which initiate definite and often pathognomonic changes in the balance between the cells of the circulating blood. The former group, as might be anticipated, either fails to produce recognizable changes in the blood or simply reflects the usual nonspecific signs of any inflammatory reaction. The following discussion will be concerned, therefore, only with the primary lymph node diseases and the blood changes produced by them. Only those diseases susceptible to treatment with radiation will be considered.

### LYMPHATIC LEUKEMIA

Although it has long been the custom to divide lymphatic leukemia into two clinical types, acute and chronic, with aleukemic phases in each, hemocytologic experience has indicated that such a classification is neither sound nor adequate except for the grossest clinical descriptive purpose. That the fundamental change of the leukemic state may exist without any alteration whatever in the cellular content of the blood has been known since the time of Cohnheim[1] and can be verified wherever adequate clinical material is available. One must also recognize the fact that cases occur, commonly in older people, presenting benign sustained lymphocytoses. Another aspect of this disease in which the lymphocytosis amounts to a "low grade" or relatively inactive leukemia persisting for twenty-two years has been reported[2] in one instance within our own experience at the department of medicine at Ohio State University College of Medicine for at least twenty-five years.[3] At the other extreme, it is common knowledge that the course of lymphatic leukemia may be fulminating and end fatally in a few days. Thus, from a hematologic point of view, responses of the lymphatic tissue vary to such a degree that the terms acute and chronic are inadequate to express these changes. Neither do these terms take into account the important relationship of lymphosarcoma to leukemia. Finally, there does not appear to be any justification for the term aleukemic lymphatic leukemia, since there is no fundamental pathologic difference between cases presenting low and high total white blood cell counts.

To emphasize the range of blood pictures found in this disease I shall present charts of each of the less active types. Chart 1 presents the hematologic data in a case of leukemia (the pathologic state) without a leukemic blood picture. This patient has been under observation for two and one-half years, during which time forty-eight studies of the blood have been made. At no time have there been any detectable changes in the blood from either a qualitative or a quantitative standpoint, except perhaps an occasional mild lymphocytosis. Although presenting a generalized adenopathy and moderate splenomegaly, with the lymph nodes (at biopsy) showing the histologic structure characteristic of lymphatic leukemia, his health and tolerance for work have not suffered in any detectable degree. Irradiation has been given this patient, as indicated on the chart, only for the purpose of reducing the size of the nodes.

Chart 2 is a graph of the blood studies of a case of extremely benign lymphatic leukemia that has been under our observation for over five years without any evidence of increase in the activity of the disease. Nine years preceding our contact with this patient a routine leukocyte count, performed prior to a pelvic operation, showed lymphocyte values differing very little from those present at this time. This patient, now 64 years of age, shows no clinical evidence of adenopathy or splenomegaly and, from the standpoint of symptoms, has been totally unaware of any underlying disease. No therapy, radiation or otherwise, has ever been given or needed by this patient for her lymphemia.

From the foregoing it is clear that lymphatic leukemia may be a very benign disorder which does not materially shorten life or measurably diminish health. On the other hand, it may kill quickly. It is probable that there are many more cases in the former group than one would suspect, since many are asymptomatic, do not show physical signs and hence are not seen by the physician. It is certain that practically all the latter more active types are recognized so that it is probable that one has a somewhat distorted view of the incidence of these various types and consequently of the nature of the mechanism of the disease. Certainly the clinical aspects of the former group are of the nature of a benign hyperplasia rather than of a neoplastic process. This is in conformity with cytologic and pathologic

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From the Department of Medicine, Ohio State University College of Medicine.

The roentgen therapy was given under the direction of Dr. Hugh Means, roentgenologist to the University Hospital.

Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints.

Read before the section on Radiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

1. Cohnheim, J.: Ein Fall von Pseudoleukämie, Virchows Arch. f. path. Anat. **33**: 451, 1865.

2. Minot, G. R., and Isaacs, Raphael: Lymphatic Leukemia: Age, Incidence, Duration and Benefit Derived from Irradiation, Boston M. & S. J. **191**: 1 (July 3) 1924.

3. F. C., seen in consultation with Dr. C. W. McGavran in 1931, died in 1935 of coronary disease at the age of 77 years. Autopsy showed only moderate glandular enlargement. The case was diagnosed by Drs. McGavran and John Musser in January 1911 from clinical and hematologic data secured at that time. This case will be reported in detail later by Dr. McGavran.

observations, which have been emphasized in a former paper.[4]

The effects of irradiation in this group are recognized almost universally as palliative in that it induces periods of relative symptom free remissions but does not importantly prolong life.[5] The objective of irradiation, therefore, at least from a hematologic point of view, is first to reduce the white blood cell count to the level that provides the most comfort to the patient and secondly to raise the level of red blood cells and hemoglobin so that the symptoms of anemia will not be present. Many patients feel a great deal better with the white count around 50,000 or even 100,000 than they do at a level of 10,000. In our clinic, therefore, irradiation is used as sparingly as possible in order to avoid making the patient radioresistant. The symptomatic complaints due to the enlargement of the lymph nodes and spleen causing pain, dyspnea, circulatory obstruction, diarrhea and the like must of course be kept under control.

As a general rule in this disease, the more inactive the case the better the results of irradiation; the more acute, the less favorable the effects. The rapidly progressive cases (acute variety) do badly. In both types, if the platelets are low, hemorrhagic phenomena are likely to be precipitated. It is therefore often necessary to support the patient with blood transfusions while therapy is being completed in order to avoid undue thrombopenia and anemia.

### LYMPHOSARCOMA

The term lymphosarcoma is often used loosely to cover all neoplastic states of lymph nodes that are not clearly Hodgkin's disease or leukemia. Such use of the term makes for added confusion in a field in which there is confusion enough. Strictly speaking, lymphosarcoma is a disease in which there is a neoplastic transformation of the lymphocytic strain of cells. Many cases of lymph node disease cannot, of course, be accurately classified with present criteria available for recognition of the various pathologic alterations of

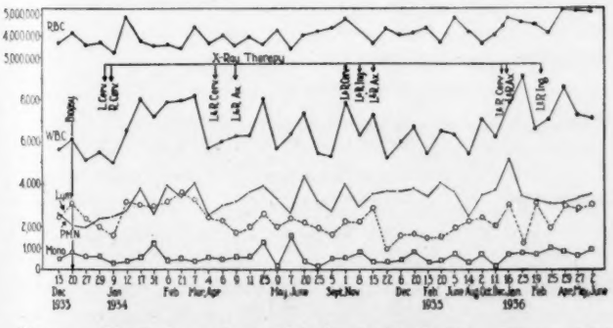


Chart 1.—Blood picture in pseudoleukemia (R. D. B.). Biopsy of left cervical gland, Dec. 20, 1933, showed pathologic conditions to be classic of lymphatic leukemia. At no time have the blood examinations revealed qualitative or quantitative alterations significant of lymphatic leukemia. Irradiation to the cervical, axillary and inguinal regions has been given as indicated solely for the purpose of reducing the enlargements.

this cell. In the following discussion, consideration will be given only to undoubted "true" lymphosarcoma.

From a hematologic standpoint, lymphosarcoma may show no detectable changes in the peripheral blood excepting perhaps a secondary anemia and/or an occasional low grade lymphocytosis. Often, however, and probably usually, the neoplastic cells break over into the blood stream in greater or lesser number, producing a type of leukemia first described by Sternberg [7] as leukosarcoma. There are many reports in the literature in which the application of the high voltage roentgen therapy over a well localized lymphosarcoma resulted in "leukemia" (leukosarcoma), nearly always of a rapidly fatal type.[8] In general, the literature has not distinguished between the leukemia of this type and

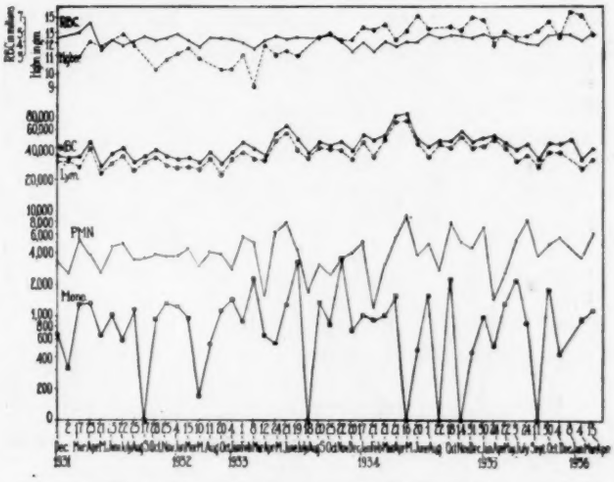


Chart 2.—Blood picture in a woman, aged 64 (J. E. H.), representing a very benign type of lymphatic leukemia. Values for the white cells are plotted on a semilogarithmic scale.

that discussed in the preceding section. An analysis of this question and its significance has been published elsewhere.[4]

Chart 4 shows the results of a series of blood examinations made in a case of lymphosarcoma in which the tumor type of cell (in contrast to normal lymphocytes) was found in the blood stream only intermittently. This case, histologically, answered the description of the tissue described by Brill, Baehr and Rosenthal [9] under the term "follicular lymphoblastoma" and is the most chronic type of leukosarcoma that we have encountered. As the chart shows, the "tumor lymphocytes" or sarcoma cells are considerably more radiosensitive than the lymphocytes. Following a single dose of 450 roentgens over the right and left inguinal lymph nodes the cells disappeared temporarily from the blood stream, although this dose did not materially affect the level of normal lymphocytes. Therapy was continued until the normal lymphocytes were markedly depressed. The chart clearly shows that the blood was nearly free from these sarcoma cells for a period of about fifty days. The behavior of these cells in response to irradiation as contrasted to the normal lymphocytes, neutrophilic leukocytes and monocytes is shown until the time of the patient's death. Uniformly, the neoplastic cells have reacted quicker and more vigorously to the destructive effects of the roentgen ray than any other cell of the blood. It has been our experience that in this type of case the cells rapidly become very resistant to radiation.

It is clear that in this type of "leukemia" radiation therapy is of little, if any, real value. With the oppor-

4. Wiseman, B. K.: Lymphopoiesis, Lymphatic Hyperplasia and Lymphemia: Fundamental Observations Concerning the Pathologic Physiology and Interrelationships of Lymphatic Leukemia, Leukosarcoma and Lymphosarcoma, Ann. Int. Med. **9**: 1303 (April) 1936.

5. Leucutia, Traian: Irradiation in Lymphosarcoma, Hodgkin's Disand Leukemia (a Statistical Analysis), Am. J. M. Sc. **188**: 612 (Nov.) 1934.

7. Sternberg, C.: Ueber Leukosarkomatose, Wien. klin. Wchnschr. **21**: 475, 1908.

8. Kato, Katsuji, and Brunschwig, Alexander: Acute Leukemia Following Lymphosarcoma, Arch. Int. Med. **51**: 77 (Jan.) 1933.

9. Brill, N. E.; Baehr, George, and Rosenthal, Nathan: Generalized Giant Lymph Follicle Hyperplasia of Lymph Nodes and Spleen, J. A. M. A. **84**: 668 (Feb. 28) 1925.

tunity for widespread metastasis that the blood stream affords, especially when constantly loaded with tumor cells, therapy is necessarily of little avail. Infiltration is always a prominent feature in this disease and consequently anemia and thrombopenia are marked.

### HODGKIN'S DISEASE (LYMPHOGRANULOMATOSIS)

The literature clearly indicates that there is no agreement among hematologists concerning the character of the blood picture in Hodgkin's disease.[10] Most observers

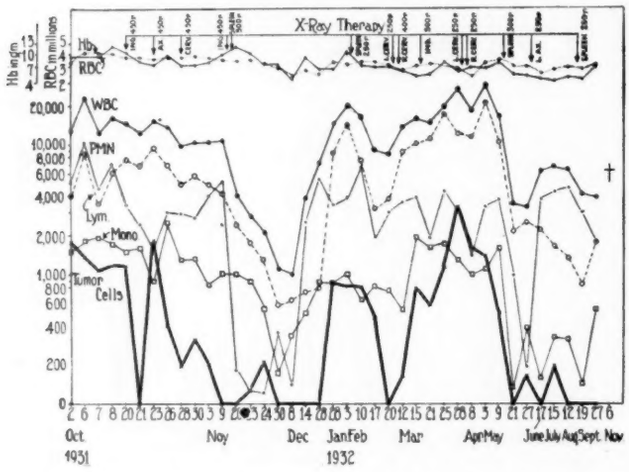


Chart 4.—Blood picture in lymphosarcoma in a man (W. S.), aged 57. The "tumor lymphocytes" are shown with the heavy line to contrast with the normal lymphocytes, portrayed with the dotted line. A semilogarithmic scale is used in plotting. The abbreviations under x-ray therapy refer to inguinal, axillary and cervical regions.

feel that the changes in the blood are neither typical nor constant;[11] a few, particularly Bunting,[12] have indicated that the hematologic criteria are quite definite. The widely diverse opinions on this subject are readily understandable. As Wallhauser[10] has pointed out, the changeable course of the disease, often with secondary infections predominating and the profound effects of intensive radiation therapy, all markedly affect the character and distribution of the blood cells. Still more important, personal experience has convinced us that dependable blood examinations are beyond the capacity of the average laboratory technician and, in order to be adequate and accurate, the most exacting personal attention of a skilled hematologist is required. This principle has obviously been violated frequently in the literature of the past so that careful discrimination, particularly between lymphocytes and monocytes, has not always been clearly evident. In other instances, the diagnosis has not been controlled by adequate histologic evidence of the true nature of the disease.

During the past five years we have studied more than sixty cases that were believed to represent Hodgkin's disease. Of this group there were twenty-one in which either tissue for histologic study could not be obtained or radiation therapy had been given prior to admission to our clinic. Eight cases showed histopathologic changes that were interpreted as probably representing Hodgkin's disease but were not regarded as classic of this disease. Our conclusions concerning the blood picture in this disease are therefore based on thirty-one cases of clinically and histologically verified disease in which previous radiation therapy had not been administered. In this group all clinical varieties described by Ziegler[13] have been encountered. All blood examinations were made in our laboratory, the supravital technic of Sabin being utilized by a staff physician adequately trained in this technic. An average of four and one-half counts per patient were performed prior to institution of radiation therapy. The accompanying table shows the results of the analysis of these blood examinations.

Study of this table shows (column 5) that approximately one half of these cases showed a normal total white blood cell count. Those in which the count was elevated to above 10,000 were found to be cases in which the disease was rather far advanced and in which all except one showed marked evidence of abdominal or mediastinal nodal involvement. This is contrary to some reports[14] in which a leukopenia is reported. However, at least five of our cases representing serious involvement of the deep nodes showed a normal or low total count. The obvious conclusion must be that, except in cases presenting principal involvement of the abdominal or thoracic lymph nodes in which the disease is far advanced and with fever as an outstanding feature, nearly all cases of Hodgkin's disease show a total white blood cell count either normal or slightly below normal.

Breaking the total white blood cell count down into its component parts, however, reveals some interesting facts. The table shows that on the whole there is a definite tendency to a neutrophilia in spite of normal total white blood cells, as nearly one half of the cases showed an absolute neutrophil count above 5,000 per cubic millimeter of blood.[15] Those with extremely high

*Analysis of Blood Counts from Thirty-One Cases of Hodgkin's Disease Diagnosed by Biopsy*

| Differential Counts Absolute Number in Thousands | | Number of Counts | Number of Cases | Per Cent of Cases | Maximum Value for Any One Case | Minimum Value for Any One Case | Average Value for All Cases |
|---|---|---|---|---|---|---|---|
| Total white blood cells | 4-5 | 38 | 8 | 25.8 | 22,850 | 4,000 | 8,379 |
| | 5-10 | 65 | 16 | 51.6 | | | |
| | 10-20 | 28 | 5 | 22.6 | | | |
| | 20+ | 6 | 2 | | | | |
| Neutrophils | 0-3.0 | 26 | 5 | 16.1 | 19,536 | 1,920 | 5,832 |
| | 3.0-5.0 | 55 | 12 | 38.7 | | | |
| | 5.0-10.0 | 33 | 11 | 45.2 | | | |
| | 10+ | 24 | 3 | | | | |
| Eosinophils | 0-0.1 | 56 | 9 | 67.7 | 1,932 | 0 | 415 |
| | 0.1-0.4 | 47 | 12 | | | | |
| | 0.4-1.0 | 23 | 7 | 32.3 | | | |
| | 1.0+ | 12 | 3 | | | | |
| Lymphocytes | 0-0.5 | 44 | 14 | 87.0 | 2,116 | 182 | 940 |
| | 0.5-1.0 | 46 | 7 | | | | |
| | 1.0-1.5 | 31 | 6 | | | | |
| | 1.5-2.0 | 7 | 2 | 13.0 | | | |
| | 2.0-2.5 | 9 | 2 | | | | |
| Monocytes | 0-0.7 | 52 | 12 | 38.7 | 1,777 | 160 | 702 |
| | 0.7-1.0 | 51 | 13 | | | | |
| | 1.0-1.5 | 30 | 5 | 61.3 | | | |
| | 1.5-2.0 | 5 | 1 | | | | |
| Monocyte-lymphocyte ratio | 0-0.35 | 12 | 2 | 6.4 | 4.016 | 0.108 | 1.33 |
| | 0.35-0.50 | 18 | 3 | 9.6 | | | |
| | 0.50-0.75 | 21 | 6 | | | | |
| | 0.75-1.0 | 16 | 4 | | | | |
| | 1.0-1.5 | 38 | 5 | 84.0 | | | |
| | 1.5-2.0 | 13 | 4 | | | | |
| | 2.0+ | 20 | 7 | | | | |

10. The hematologic changes are comprehensively reviewed by Andrew Wallhauser (Hodgkin's Disease, Arch. Path. **16:** 522 [Nov.] 1933), with literature citations, and therefore will not be repeated here.

11. Straube, G.: Ueber das Blutbild der Lymphogranulomatose, Folia haemat. **44:** 125 (May) 1931. Roth, G. M., and Watkins, C. H.: The Leukocyte Picture in Hodgkin's Disease, Ann. Int. Med. **9:** 1365, 1936.

12. Bunting, C. H.: The Blood Picture in Hodgkin's Disease, Bull. Johns Hopkins Hosp. **25:** 173, 1914.

13. Ziegler, K.: Die Hodgkinsche Krankheit, Jena, Gustav Fischer, 1911.

14. Hayden, Helen C., and Apfelbach, C. W.: Gastro-Intestinal Lymphogranulomatosis, Arch. Path. **4:** 743 (Nov.) 1927.

15. The percentage of cells is of value only to compute absolute numbers of cells. Comparison of percentage of cells is usually of no scientific value; hence only absolute values are used in this analysis.

neutrophilic values belonged to the class showing deep lymph node involvement already noted. Those in which the neutrophils were less than the arbitrary level of 5,000 per cubic millimeter of blood did not seem to belong to any particular clinical group. Our lowest value (1,970) was in a patient (F. M.) who had a bone marrow biopsy performed on the sternum, with the result that this tissue was found aplastic for myeloid elements but hyperplastic for lymphoid elements. It is probable that cases showing neutropenia reflect extensive bone marrow involvement, sometimes a feature of this disease.[16] In general, this series of cases shows that there is a distinct tendency to a neutrophilia, thus substantiating most of the reports of the literature.[10]

Analysis of the white blood cell counts in terms of the eosinophilic granulocytes reveals that at least two thirds of the virgin cases of Hodgkin's disease show no distinct elevation in eosinophils. Contrary to the observations of Bunting,[17] we have found no clear relationship between the activity of the disease and the level of eosinophils. Our most chronic case, observed for five years with little change in physical status, has only rarely shown a value for these cells above 400 per cubic millimeter of blood. In this case a mild exacerbation of the disease was accompanied by increase in these cells (chart 8). The highest values for this cell were encountered in a rapidly progressive case (M. S.). Other cases do not show any association between eosinophilia and any other clinical or histologic fact about the disease; therefore we concur in the opinion that eosinophilia may be the expression of an allergic state as suggested by Weber and Bode [18] and others. In general our study shows that an absolute increase in eosinophils is more often absent than not but is present often enough to constitute a valuable diagnostic sign, when considered in association with the other features presented by the patient, both hematologic and clinical. Eosinophilic myelocytes have never been seen in Hodgkin's disease in our clinic.

Our data, showing a definite, often profound lymphopenia, are in general agreement with the literature on this subject. Approximately nine tenths of our cases show absolute counts less than 1,500 lymphocytes per cubic millimeter of blood. We have had the experience of searching a blood film from a patient with this disease (L. G.) for fifteen minutes without encountering a single lymphocyte. We have not encountered a single case in which the number of lymphocytes has exceeded the normal. The explanation for the lymphopenia so regularly encountered in this disease we believe lies largely in the mechanics of the disease. Unpublished studies from our laboratory indicate that the cytology involved in Hodgkin's disease is probably not primary in the lymphocyte itself but rather in the reticulum cell or monocyte or both. Hyperplasia of the latter elements, together with an increase in fibrous tissue, exerts a mechanical displacement of the lymphoid tissue which is reflected in the blood stream as a lymphopenia. When toxemia is marked, this also undoubtedly depresses lymphocytic formation,[19] and when added to the mechanical factor it results in the occasional extremely low values for this cell. We have not observed any association between the level of lymphocytes and the activity or other features of the disease except, of course, during those phases in which toxemia is clearly influencing the blood count.

The table reveals a definite tendency to monocytosis, nearly two thirds of the cases showing values exceeding 700 cells per cubic millimeter of blood. This is an unmistakable increase and confirms Bunting's observations. The many reports in the literature showing low or normal values for this cell may be explained partly by the use of percentage comparisons instead of by the use of absolute values, and partly by the inaccuracies before referred to in separating the monocyte from the lymphocyte in fixed smears. The use of the supravital technic leaves little doubt concerning the frequency of a monocytosis. There does not seem to be any relationship between the level of the monocytes and the clinical

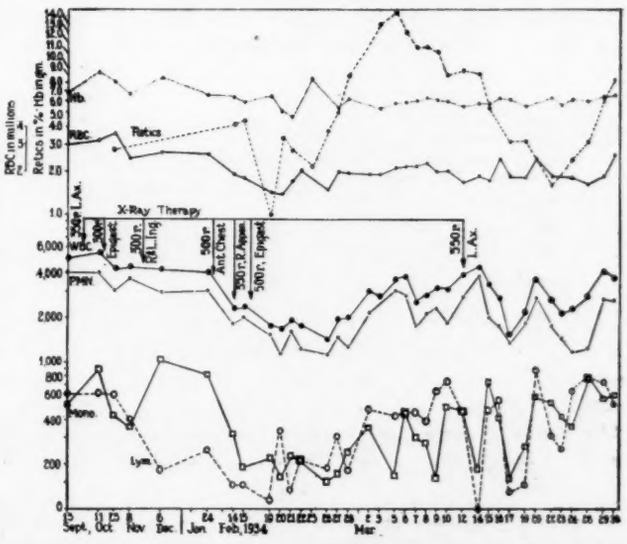


Chart 6.—Blood picture in a woman (R. L. C.), aged 54, showing the response of the blood forming tissues to irradiation in a case of moderately progressive Hodgkin's disease. Abbreviations under x-ray therapy refer to epigastric, inguinal, appendiceal, anterior chest (mediastinum) and axillary regions. Charting is on a semilogarithmic scale.

type or activity of the disease. However, our observations tend to show that the more granulomatous in nature the diseased tissue, the higher the monocytes in the blood of the patient.

The facts concerning the levels of both lymphocytes and monocytes may be conveniently expressed by the use of the monocyte-lymphocyte index of Sabin and Doan. The table indicates that well over 90 per cent of the cases showed values for this index exceeding the normal of 0.35. More than one half of the cases have shown very high indexes, exceeding unity.

All cases of Hodgkin's disease sooner or later show varying degrees of anemia. This involves both the red blood cells and the hemoglobin. The reticulocytes are usually moderately increased (chart 6). Basophilic leukocytes are almost always unchanged in numbers. Our data on blood platelets are inadequate at present for careful analysis.

A summarization of this discussion therefore makes it clear that, while there is no blood picture absolutely pathognomonic of Hodgkin's disease, there are nevertheless in the vast majority of cases quite characteristic changes in the blood that accompany this disease. In

16. Symmers, Douglas: A New Interpretation of the Pathologic Histology of Hodgkin's Disease, Arch. Int. Med. **19**: 990 (June) 1917. Medlar, E. M.: An Interpretation of the Nature of Hodgkin's Disease, Am. J. Path. **7**: 499 (Sept.) 1931.
17. Bunting, C. H.: The Blood Picture in Hodgkin's Disease, Bull. Johns Hopkins Hosp. **22**: 369, 1911.
18. Weber, F. P., and Bode, O.: Case of Abdominal Lymphogranulomatosis Maligna with High Blood Eosinophilia and Lymphogranulomatous Infiltration of Epidural Fat, Lancet **2**: 806 (Oct. 15) 1927.
19. Wiseman, B. K., and Doan, C. A.: The Lymphatic Reaction in Tuberculosis, Am. Rev. Tuberc. **30**: 33 (July) 1934.

this I am in full agreement with Bunting. The most constant finding is a lymphopenia with a monocytosis giving a high monocyte-leukocyte index (over 90 per cent in our series). The total white blood cells are usually within plus or minus 10 per cent of normal limits. There is a distinct tendency to a neutrophilia, often with an absolute increase in eosinophils. A secondary anemia, chiefly of the hemoglobin type, is an almost constant feature. Given, therefore, a blood study that shows a lymphopenia with a high monocyte-lymphocyte index with normal total white blood cells, a mild neutrophilia and any increase at all in eosinophils, one would appear to be justified in suggesting the possible diagnosis of Hodgkin's disease on the basis of the blood examination alone. About 25 per cent of our cases have shown all these changes to be coexistent. I have observed no other disease, save an occasional case of tuberculosis, that gives this blood picture.

The interpretation of this cellular response in a disease of unknown etiology [20] assumes considerable importance and may perhaps be of considerable significance. In the first place, a mild neutrophilia with a normal

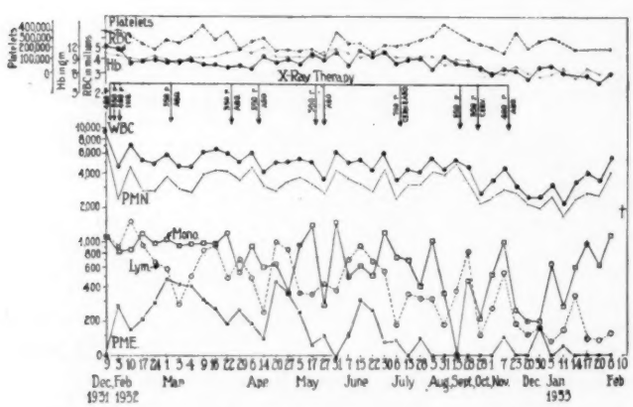


Chart 7.—Blood picture in Hodgkin's disease in a man (G. H.), aged 22, showing progressive diminution in values for all cells during the course of disease. Abbreviations under "x-ray therapy" refer to inguinal, abdominal (epigastrium) and cervical regions. Charting is on a semi-logarithmic scale.

total white blood cell count would bespeak a nonpyogenic infectious agent and may be regarded as evidence against either tumor [21] or virus [22] as the etiologic agent. The pronounced lymphopenia encountered so often with a preponderance of mature types of lymphocytes seems to indicate that the pathologic state is at least not one of lymphoid hyperplasia. Every other disease known that is associated with lymphoid hyperplasia is characterized by the appearance in the blood stream either of normal or of increased numbers of these cells, or else cells with immature characteristics. The evidence obtained from analysis of the blood lymphocytes, therefore, makes it improbable that Hodgkin's disease is a disease of the lymphocyte, even though it occurs principally in lymphoid tissue. This fact makes it appear by exclusion that the pathologic transformation occurs in the reticulum cell, free undifferentiated primitive cells or monocytes. The cytology of gland scrapings tends to implicate the monocyte and/or its primitive ancestors. Monocytes are known to form multinucleated giant cells with ease,[23] whereas this activity has never been described for lymphocytes, and I have never seen it. The position that the pathologic transformation may be a neoplastic transformation of the lymphocyte is almost untenable, since it does not remotely resemble true lymphosarcoma.

The rather constant presence of a monocytosis tends to support the hypothesis that the underlying abnormality is importantly associated with this cell. This conceivably could be a result of monocytic hyperplasia and in this sense be allied to monocytic leukemia.[24] The monocytic increase also may be the result of a stimulus of nonspecific nature which accompanies all inflammatory reactions. On the other hand, the monocytic reaction may be of a specific nature from tuberculophosphatide.[23] The presence of epithelioid cells speaks rather for the latter, and it is possible that the entire train of events occurring in this disease may be the result of or associated with activity of the tubercle bacillus, as recently advocated.[25] It is possible that the occurrence of eosinophils expresses the allergic state, which is such a prominent part in the immunology of tuberculosis.

Considered in its entirety, the evidence obtained from the study of the blood cells, whatever that evidence may be worth, is definitely against this being a disease in which the lymphocyte is involved, except in a secondary sense. An infectious agent, of very low virulence, of nonpyogenic origin which results in pathologic alteration and hyperplasia of the reticulum cell-monocyte maturation cycle, allied on the one hand to the tubercle bacillus or on the other hand to monocytic leukemia, would best explain the cellular reaction produced in the blood by this disease.

This etiologic interpretation of the blood picture in Hodgkin's disease is not, of course, necessarily in conflict with the fact that certain cases exhibit definite neoplastic characteristics. The frequent association of neoplasia with chronic lesions is not unknown in other tissues of the body. This phenomenon, when it arises in lymphogranulomatous alterations of lymphoid tissue, may well explain that type of Hodgkin's disease obviously neoplastic and described by Ewing as "Hodgkin's sarcoma."

### THE BLOOD PICTURE IN HODGKIN'S DISEASE DURING AND AFTER IRRADIATION

The effects of irradiation on normal blood-forming tissues are too well known to warrant comment. The reaction in Hodgkin's disease, however, is modified by the facts concerning the nature of the blood picture and bone marrow as detailed in the foregoing section. In this disease it is clear that irradiation is started often when considerable anemia and lymphopenia preexist. It is also clear that because the pathologic tissue often extensively invades both the lymph nodes and bone marrow the available amount of functioning hematopoietic tissue may be very small. It therefore follows that very minor amounts of irradiation may produce rather profound changes in the level of red blood cells, neutrophilic leukocytes and lymphocytes. Because of these facts, irradiation in this disease must be given

20. Krumbhaar, E. B.: Is Typical Hodgkin's Disease an Infection or Neoplasm? Am. J. M. Sc. **188**: 597 (Nov.) 1934.

21. Warthin, A. S.: The Genetic Neoplastic Relationship of Hodgkin's Disease, Aleukemic and Leukemic Lymphoblastoma, and Mycosis Fungoides, Ann. Surg. **93**: 153 (Jan.) 1931.

22. Gordon, M. H.: Rose Research on Lymphadenoma, Baltimore, William Wood & Co., 1933.

23. Sabin, Florence R.; Doan, C. A., and Forkner, C. E.: Studies on Tuberculosis, J. Exper. Med. **52**: 113 (supp. 3) 1930.

24. Dameshek, William: Proliferative Diseases of the Reticulo-Endothelial System; Aleukemic Reticulosis, Folia haemat. **49**: 64, 1933. Doan, C. A., and Wiseman, B. K.: The Monocyte, Monocytosis and Monocytic Leukosis: A Clinical and Pathological Study, Ann. Int. Med. **8**: 383 (Oct.) 1934.

25. L'Esperance, E. S.: Experimental Inoculation of Chicken with Hodgkin's Nodes, J. Immunol. **16**: 37 (Jan.) 1929, **18**: 127 (Feb.) 1930.

cautiously and be carefully controlled by serial blood examinations. Chart 6 is illustrative of the profound effects that may result from rather light treatment. Following high voltage roentgen therapy of 350-300-300 roentgens given over 120 sq. cm. of skin area of the left axilla, epigastrium and right and left inguinal region over a period of fifty-five days, the red blood cells, neutrophils and lymphocytes fell from preirradiation levels of 3,000,000, 4,000 and 600 cells respectively per cubic millimeter of blood to 2,600,000, 3,000 and 180 cells. Since the counts appeared to stabilize at these levels and since the reticulocytes had not fallen (indicating no apparent damage to regeneration), a second series of treatments was given consisting of 500, 350 and 500 roentgens over 200 sq. cm. of skin area over the mediastinum, right appendiceal region and epigastrium to control persistent symptoms. These exposures were given over a period of twenty-two days. Three days following the last exposure the red blood cells, neutrophilic leukocytes and lymphocytes fell to 1,400,000, 1,100 and 200 cells respectively. The reticulocytes had dropped from 4.2 per cent to 1 per cent. Although the patient needed further irradiation from a symptomatic standpoint, it was felt that the alarming damage to the hematopoietic tissue precluded additional therapy at this time. Serial counts were performed until the values for the blood cells showed no further rise. After establishing a plateau at levels of 2,000,000, 2,500 and 500 cells each for the red blood cells, neutrophils and lymphocytes, a single exposure of 350 roentgens over 200 sq. cm. of skin surface in the region of the left axilla was given twenty-six days after the previous exposure. The marked fall in neutrophils and lymphocytes is clearly shown following this single exposure. It is clear that in this case only careful following of the blood changes made possible the application of radiation therapy with safety to the patient.

Chart 7 shows the effects of irradiation on the blood in another patient with Hodgkin's disease who was considerably less susceptible to the adverse influence of the roentgen ray on the blood-forming tissues. Whereas the former case developed alarming anemia and leukopenia following 2,200 roentgens over a period of five months, the present case developed very little change when approximately the same dose was given over a time interval of three and one-half months (to April 8). After continued treatment, however, the blood cell values began to fall on September 13, so that it was felt inadvisable to continue further exposures, since more damage was being done to the blood-forming tissues than was gained in relief from the symptoms of the disease. The patient died February 10 with a profound lymphopenia. The neutrophils and monocytes were the only cells to recover to preirradiation levels.

This case emphasizes the adverse effects on the erythrogenic and lymphocytogenic tissues of the combined effects of irradiation, toxemia and mechanical displacement with pathologic tissue. The advantage, if not the actual necessity, of guiding radiation therapy with serial blood cell counts is obvious.

Chart 8 shows for a period of over five years the blood changes in a very chronic case of Hodgkin's disease. By judicious application of roentgen therapy as advocated by Craver,[26] the symptoms in this patient have been controlled and he has remained in a state of average good health. The blood examination on his last visit to our clinic, June 24, 1936, showed as good values for all cells as on his first visit in December 1930. I feel that the protection of his blood-forming tissues by avoiding irradiation as much as possible has helped to maintain nutrition and probably ward off infections, which are so often a problem in this disease.

Our experience would seem to indicate that careful blood counts often repeated are valuable if not actually indispensable for the patient's safety, in controlling roentgen therapy in this disease as well as in the leukemic states. Satisfactory lymphocyte and neutrophilic leukocyte values are conceded to be important in order to maintain health. Satisfactory levels of red blood cells and hemoglobin are essential for oxygenation of the tissues in order to maintain strength and maximum metabolic activities. It would therefore seem that the optimum in the treatment of this disease can be attained only when symptoms are controlled without unnecessary additional damage to the blood-forming tissues. This can be assured only by adding the results of careful blood examinations to the other criteria used in gaging the intensity and the time between treatments.

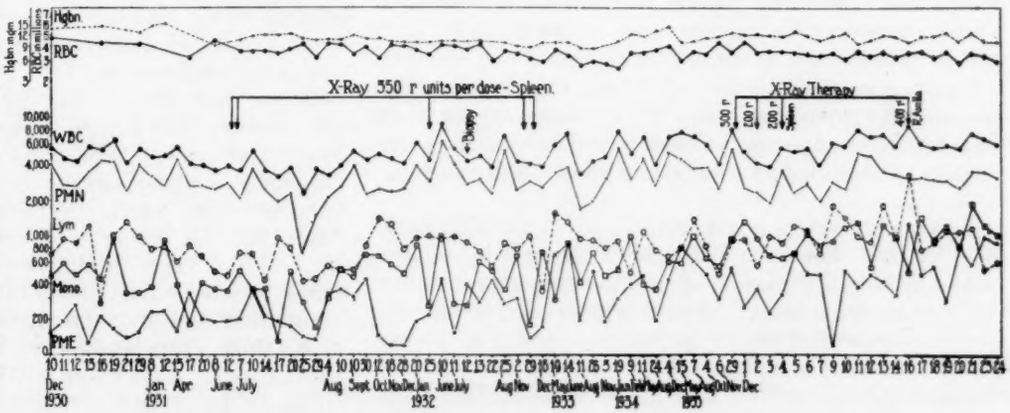


Chart 8.—Blood picture in Hodgkin's disease (H. W.), showing the hematologic events in a very chronic case. Charting is on a semilogarithmic scale.

## SUMMARY

1. The primary diseases of the lymphatic system that may be favorably influenced by irradiation consist of lymphosarcoma, lymphatic leukemia and Hodgkin's disease. It is probable that, excepting the benign hyperplasias, all primary diseases of the lymphoid tissues difficult to classify belong in one of these three classes.

2. All grades of lymphatic leukemia may be encountered, ranging from the pathologic state without leukemia, through benign states resembling chronic lymphocytosis, to those which are very rapidly progressive and rapidly fatal. Many of these types show very little resemblance, cytologically, clinically or histologically, to neoplasia.

3. Lymphosarcoma may be characterized hematologically either by a leukemic or by a nonleukemic blood picture. The former constitutes a type of leukemia

26. Craver, L. F.: Five Year Survival in Hodgkin's Disease, Am. J. M. Sc. **188:** 609 (Nov.) 1934.

(leukosarcoma) which possesses special features of neoplasia and is rapidly progressive and very radiosensitive.

4. Hodgkin's disease, usually but not always, possesses a characteristic blood picture. These characteristics are interpreted as suggesting an alteration of the reticulum cell-monocyte maturation cycle arising from an infectious agent.

5. Careful blood studies in the control of radiation therapy in this group of diseases are necessary if optimum therapeutic results are to be obtained.

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## ROENTGEN TREATMENT OF THE SO-CALLED MALIGNANT LYMPHOMAS

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BOSTON

The disease entities discussed are described by their common designations Hodgkin's disease, chronic lymphatic leukemia and chronic myelogenous leukemia. Various attempts to classify them on the basis of stem cell or morphologic grounds and the merits of the controversy as to whether one or the other is an infectious process need not detain one. For all essential purposes they involve radiosensitive tissues and behave like neoplastic processes, terminating almost invariably in death.

This report covers a ten year period (1925-1935) and includes only cases that have been checked by biopsy, adequate blood studies and postmortem examination. All sections have been reviewed recently and confirmed by Dr. Frederic Parker, pathologist, and Dr. Henry Jackson of the Lymphoma Clinic of the Boston City Hospital. Any doubtful case has been discarded. Any patient who has been lost to follow up has been considered dead. Any leukemia of less than three months' duration has been considered acute and has not been included, as such is considered unamenable to any form of therapeusis. Any patient having died within one week of the beginning of roentgen therapy has been considered to have had inadequate irradiation and has not been made a part of this study. The patients comprising the statistics have had what has been considered adequate roentgen therapy, alone or in conjunction with other measures.

### HODGKIN'S DISEASE

There were forty-five patients who presented on section a characteristic histopathologic pattern of Hodgkin's disease. There were twenty-eight males, with an average age of 47.6 years; the youngest was 14 and the oldest 65 years. The youngest female was 14 and the oldest 72 years. The average age of the group was 40.6 years.

There are thirty-four dead who had their disease 14.8 months before roentgen therapy and lived 14.4 months after it, a survival average of about two and one-half years.

There are eleven living who had the disease on the average of 11.2 months before roentgen therapy and 21.7 months after, a survival of something better than two years and nine months.

The living, on the average, are living longer after irradiation than did the group that is dead. This may be due to better clinical management since the establishment of a lymphoma clinic and to the irradiation, which was begun earlier in these cases and given more aggressively.

My figures seem to bare out the contention of Minot and Isaacs [1] that life is not prolonged appreciably by irradiation.

Gilbert and his associates [2] believe that roentgen treatment in Hodgkin's disease considerably lengthens the average term of the patient's life to double or even treble from the first appearance of the symptoms. For seventeen living patients they report an average survival rate of six years and five months, but in that group are five patients, one surviving twenty years and six months, one sixteen years and ten months, one twelve years and seven months, one ten years and another nine years and five months. These total sixty-nine years and four months and in a group of seventeen cases are bound to produce a misleading survival rate.

Thirty-seven cases are classified by them as follows: acute (few weeks) one case, subacute (from a few months to two years) seven cases, average type (from 2 to 6 years) twenty-one cases, and protracted (over six years) eight cases.

More than 78 per cent by this classification are of the average and benign types living from two to six years and over. When the series I am reporting is classified similarly, 60 per cent fall into the acute and subacute types which survive two years or less, thirteen cases, or 28.8 per cent, in the average and five cases, or 11.1 per cent, in the benign types. Three of the latter patients survived a total of twenty-five years and six months and undoubtedly created an inflated survival rate (three years and eleven months) for the nineteen cases that I [3] reported in 1931. Of the eleven patients living in the present series, only two have lived beyond six years, one by nine months and the other by three months.

It is interesting to note that the five patients with the benign type in this series who survived the longest received low and medium voltage roentgen therapy. Each one was benefited strikingly by irradiation. When the physical set-ups employed in these earlier cases were reproduced as closely as practicable, the x-ray intensity measured in roentgens was found surprisingly close to that given now with higher voltages.

With the installation of apparatus capable of generating higher voltages, patients were treated with 165, 185 and 200 kilovolts, with appropriate copper filtration, in an attempt to carry out Desjardins' [4] idea of stepping up the voltage as remissions became less permanent and the lesions appeared to become "ray fast." The use of copper filtration and greater distance for medium voltages reduced the intensity much below what was obtained with the aluminum filtration and shorter distance employed in the earlier work, which may account for some of the unsatisfactory results.

For nearly three years now our technic has settled down to 200 kilovolts, 8 milliamperes, 0.5 mm. of copper, 1 mm. of aluminum, 50 cm. distance, about 210 roentgens measured in air per field, and one or two

From the Roentgen Department of the Boston City Hospital.
Read before the Section on Radiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

1. Minot, G. R., and Isaacs, Raphael: Lymphoblastoma, J. A. M. A. **86**: 1185 (April 17) 1926.
2. Gilbert, R.; Babaiantz, L., and Kadrnka, S.: L'influence de la roentgenthérapie sur l'évolution de la granulomatose maligne, Acta radiol. **15**: 508 (July 24) 1934.
3. O'Brien, F. W.: The X-Ray Treatment of Hodgkin's Disease, Radiology **17**: 1197 (Dec.) 1931.
4. Desjardins, A. U.: The Rationale of Radiotherapy in Hodgkin's Disease and Lymphosarcoma, Am. J. Roentgenol. **17**: 232 (Feb.) 1927.

fields daily or every other day depending on the general condition of the patient, not stopping until a well defined erythema is present, if the urgency of the symptoms warrant. The chief advantage of high voltage irradiation is that it can be used over a long period of time without damage to the patient's skin, and it has of course the added advantage over medium and low voltage of greater penetration if one is treating deep seated glandular masses. The absorbed radiation, irrespective of wavelength, seems paramount. One must not conclude, because in the literature one reads that only "weak doses" of radiation should be given in these conditions, that therefore high voltage irradiation is ill advised. Dosage is a very relative term and must be considered in relationship to voltage, current, filtration, distance, size of field, intensity measured in roentgens, duration, chronological spacing, portion of the anatomy irradiated, and the blood picture before and after treatment.

The damaging effect of x-irradiation on the red blood cells has been greatly overemphasized. It should be recalled that in Hodgkin's disease death is usually preceded by a profound anemia, irrespective of the employment of irradiation. The patients in my series who have lived the longest have had a peripheral blood picture close to normal.

I have seen no case in which anemia has developed that could be directly attributed to the irradiation. Indeed, I have seen many presenting anemia and low hemoglobin return to normal count and color index following irradiation. The explanation may lie in the fact that the irradiation, though intensive, has been fractional, applied locally, with no attempt to cover the entire body by design, the total dose per port given within a relatively short time, and the unexposed portions of the hematopoietic system not being affected, at least not directly.

The following case illustrates this rather well:

A man, aged 34, entered the hospital in December 1932 with Hodgkin's disease, which had been recognized for two years. At the time of his entrance his blood showed red blood cells 4,470,000, white blood cells 14,500, hemoglobin 72 per cent. His chief complaint was pain in the chest. A diagnostic x-ray examination demonstrated right pleural effusion. This cleared under roentgen treatment. After a remission of three months he returned with symptoms referred to his back. X-ray examination showed the lung fields clear with partial destruction of the twelfth dorsal and first lumbar vertebrae. Roentgen treatment promptly relieved the pain. No progression of the lesions in the vertebral bodies was demonstrable. Following a two months remission he returned, complaining of pain in the chest, when x-ray examination showed a tumor mass in the left lower lobe with a small amount of fluid. Roentgen therapy was instituted, followed by a remission of eleven months. In November 1934 he reported, complaining of lack of "pep." Reexamination of the chest showed the left lung field clear and a return of fluid in the right pleural space. He was again treated with high voltage x-rays. Following the last treatment of the series the roentgenologist's note Jan. 11, 1935, was "marked clearing of right lower lung field." Blood examination, February 20, was red blood cells 4,950,000, white blood cells 17,350, hemoglobin 82 per cent. That day he came to the clinic with enlarged glands in the right groin and bilateral iliac nodes, which responded rapidly to irradiation. The note on the blood under date of May 1 states that blood returned to normal; hemoglobin to 95 per cent. All this time he had been performing his duties as a police officer. Two months later paraplegia developed with sensory disturbances as high as the fourth dorsal segment. X-ray examination now showed involvement of all the lower dorsal vertebrae. He was given high voltage roentgen therapy over the dorsal spine through two oblique portals per sitting every other day for forty-five treatments, a total of 5,250 roentgens over a period of three months. After one month of treatment sensation returned and he was able to move his toes. The amount of radiation measured in roentgens over four years was tremendous and had no appreciable effect on the red blood cells.

With local treatment there is little danger of damage to the red blood cells, especially if the long bones are not irradiated, a practice we abandoned long ago. With teleroentgenotherapy, provided the whole body is irradiated at one sitting and the intensity is too great, anemia indeed may promptly follow.

Although from statistical evidence there is no certainty that irradiation adds to the duration of life in Hodgkin's disease, nevertheless, as Jackson [5] has said, it is the mainstay of treatment.

The obvious direct benefits from roentgen therapy are decrease in the size of regional lymph nodes, decrease in the size of the liver and spleen with consequent relief from pressure symptoms, resorption of pleural effusion, resorption of ascites, relief of pain, restoration of sensibility and locomotion in cord and vertebral metastases, increase in red cells and color index, remissions of the disease with return to occupation, and comparative comfort over long periods of time.

### CHRONIC LYMPHATIC LEUKEMIA

Twelve patients with chronic lymphatic leukemia were treated by x-rays, ten men and two women, all over 47 years of age. These patients had their disease on an average of 13.9 months before roentgen therapy was begun and lived an average of 14.6 months following it, a total survival of about two years and four months; 50 per cent of the group lived on an average only 3.3 months after irradiation. All of them had a marked anemia as well as an unusually high white blood cell count at the beginning of roentgen therapy. Ten are dead and two are living. The longest survival was that of a man, aged 53, who lived five years and two months, having had only low voltage therapy. Of the two living, one is a woman aged 73, living four years and five months. The last follow-up note, made December 15, one year after her last treatment, reads: "No palpable nodes, spleen and liver not felt." The other living patient is a man, aged 48, who has had his disease two years and three months. In his case the regional glands have responded to roentgen irradiation but the white blood cell count from the start has shown a steady tendency to rise. October 10, 1935, his blood was: red blood cells 4,600,000, white blood cells 221,000, hemoglobin 78 per cent.

### CHRONIC MYELOGENOUS LEUKEMIA

There are twenty-nine patients with chronic myelogenous leukemia in the series treated by x-rays, twenty men and nine women. The majority were in the fourth decade and beyond; the average duration of the disease before treatment was 16.5 months and after treatment 21.9 months, a total survival average of 3.2 years. There are twenty-five dead, of whom seven lived for six years. There are four living, one a man, aged 41, who has had his disease about nine years; another, aged 62, who has had his disease about five years and ten months; another, aged 41, with the disease one year and nine months, and one woman, aged 34, with the disease two years and eight months.

Some of these cases were treated with irradiated blood, urine concentrates, various proprietary preparations of cod liver oil, naphthalene tetrachloride, pan-

5. Jackson, Henry, Jr.: Primary Tumors of Lymph Nodes, Commonwealth **21**: 282, 1934.

nuclear material and solution of potassium arsenite. Blood transfusions were not used as a routine. Solution of potassium arsenite was not nearly as satisfactory in lymphatic leukemia as in the myelogenous variety. The remissions were not as prolonged in many cases as with irradiation. To argue that spontaneous remissions occur is not effective, since such is the exception and not the rule.

"In the leukemias, Fowler's solution may be tried" say Witts and Levitt [6] "if facilities for intelligent irradiation are not available."

Irradiation alone has any appreciable effect on the size of the spleen and adenopathy elsewhere. Harassing pruritus is allayed promptly. Iron is recommended for the anemia in leukemias. The red blood cell count and hemoglobin, however, rise quite as often with only roentgen therapy provided myelocytes and small and medium lymphocytes make up the rest of the peripheral blood picture. With myeloblasts and lymphoblasts present, the anemia is progressive and these patients do poorly.

While irradiation by x-rays remains the therapy of choice, it is empirical. In explanation of the resorption of effusion and ascites a physicochemical reaction is presumed. The reduction in size of the glands in Hodgkin's disease may be the result of fibrosis, part of the natural history of the disease, yet irradiation perhaps has stimulated the defensive mechanism of the body to bring this about. The effect most probably is not a direct one but indirect; otherwise it is difficult to explain the disappearance of glandular swellings (the so-called distant effect) outside the direct field of irradiation.

The increase in red cells and hemoglobin is quite likely, owing to physiologic stimulation of the hematopoietic system. Isaacs [7] is very definite that the action of irradiation in the leukemias is one of stimulation of the blood cells to divide if in the blast stage or to mature in a normal manner if of adult character.

Bovie [8] and others, from the analogy of the action of light on the photographic plate and the response of plants to light, cite facts, experimentally deduced, which seem to explain the reaction of the human body in its response to irradiation. In view of the contention that the effect of irradiation is one of stimulation, it is important to restate them:

1. Light produces a photochemical product, and phototropic response occurs only when the amount of this product reaches a certain minimal value.

2. The stimulative effect of illumination may be received by one portion of the body and transmitted to another. Continuity of uninjured cells is not necessary for this conducted effect.

3. Only a small amount of photochemical product is required to initiate the physiologic events through which a modification of structure is brought about.

4. Deficiency in the amount of light results in a delayed or complete failure of tissue differentiation. An exposure to an excess amount of light may result in premature differentiation.

5. Exposure to light is one of the determining conditions of tissue differentiation and, when the light intensity is reduced below the optimum, it may become the limiting factor.

6. Witts, L. J., and Levitt, W. M.: Treatment of the Leukaemias, Brit. M. J. **1**: 762 (April 11) 1936.

7. Isaacs, Raphael: Maturing Effect of Roentgen Rays on Blood-Forming Cells, Arch. Int. Med. **50**: 836 (Dec.) 1932.

8. Bovie, W. T.: Effect of Sunlight on Growth and Development, Scient. Monthly **21**: 70 (July) 1925.

These dicta appear to be particularly applicable in the group of diseases under discussion. No one more than the radiation therapist recognizes that irradiation has not accomplished what might be reasonably expected of it. For that reason many have turned to general body irradiation, which on the face of it seems a logical procedure if these diseases are widespread and systemic even before visible or palpable manifestations are present.

Evans and Leucutia [9] in 1927 recommended irradiation of not only the palpable glandular masses but the entire lymphatic system. Sluys [10] of Brussels advocated total body irradiation, using from ten to fourteen portals of entry successively over two days.

Simultaneous total body irradiation of one surface was described by Dessauer [11] in 1905 when he exposed the head, trunk and extremities of a patient to three x-ray tubes functioning at the same time. He had hoped to use this technic in cancer treatment, but it was not practical at the time because of the danger of absorbing large doses.

In 1927 Teschendorf [12] described a method of treating the leukemias with the x-ray tube placed about 6 feet (1.8 meters) away so as to irradiate a large part of one surface of the entire body at one sitting, which has come to be known as teleroentgentherapy. The anterior surface would be exposed at one time, the posterior at another and the treatments spaced according to the rate of fall of the white blood cell count.

Heublein [13] conceived the idea of continuous teleroentgentherapy with the tube at 18 and 24 feet from the patients. The patients received continuous roentgen therapy twenty hours a day, treatments lasting from 7.5 to 13.9 days.

There have been many modifications of teleroentgentherapy, owing to the limitations of the individual's physical set up. It is known that the irradiation of a plane surface with normal rays is uniform within a circle having the base of the normal ray as center and half the focal distance as the diameter. It is evident that technics dubbed "spray treatment" in which short distances are used are not capable of simultaneous irradiation of one surface of the entire body. It is not yet clear, of course, that such is necessary or desirable.

To cover the entire body the tube must be placed at a distance of 12 feet or more. At the Boston City Hospital a 12 foot distance is employed. With 200 kilovolts pulsating tension 5 milliamperes and 1 mm. of copper with 1 mm. of aluminum, 0.25 roentgen per minute is delivered at the center of the field.

When the distance between the center of the field and its periphery becomes greater than 2½ feet, the intensity of the field diminishes considerably. The head and the feet of the patient receive about 0.16 roentgen per minute. The treatments are spaced and 10 roentgens per surface measured at the center of the field is not exceeded.

Whether one practices continuous or spaced total teleroentgentherapy, it should be made plain that it is not something lightly to be assumed by the novice. The

9. Evans, W. A., and Leucutia, Traian: Roentgen-Ray Treatment of Lesions of the Lymphoid Tissue, Am. J. Roentgenol. **17**: 54 (Jan.) 1927.

10. Sluys, F.: La roentgenthérapie totale par champs séparés et la téléroentgenthérapie dans la lymphogranulomatose, Ann. d'anat. path. **8**: 926 (Oct.) 1931.

11. Dessauer, F.: Eine neue Anordnung zur Röntgenbestrahlung, Arch. f. phys. Med. u. med. Techn. **2**: 218, 1907.

12. Teschendorf, Werner: Ueber Bestrahlung des ganzen menschlichen Körpers bei Blutkrankheiten, Strahlentherapie **26**: 720, 1927.

13. Heublein, A. C.: A Preliminary Report on Continuous Irradiation of the Entire Body, Radiology **18**: 1051 (June) 1932.

entire hematopoietic system and glands of internal secretion are exposed to radiation and there appears to be a true threshold dose for each patient which cannot be exceeded without inviting violent reactions.

No one as yet has used the method over a sufficiently long period to justify its universal adoption.

### CONCLUSIONS

1. Roentgen therapy was used locally in fractional doses in the treatment of forty-five cases of Hodgkin's disease, twelve cases of lymphatic leukemia and twenty-nine cases of myelogenous leukemia over a ten year period with symptomatic relief.

2. Some patients enjoyed relatively good health over long periods of time, but there is no convincing evidence of prolongation of life by irradiation.

3. The patients who lived longest seemed destined to do so when analyzed in the light of the natural history of their disease.

4. A method of irradiation, teleroentgentherapy, may lead to greater salvage in this group.

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## LEUKEMIA OF THE STOMACH PRODUCING HYPERTROPHY OF THE GASTRIC MUCOSA

LEO G. RIGLER, M.D.
MINNEAPOLIS

Generalized leukemic infiltration of the viscera, as well as of the bones, is not uncommon. Frequently it occurs in association with a normal blood picture; i. e., aleukemic leukemia. The blood picture may change and the characteristic signs of leukemia may appear, but during the aleukemic phase the diagnosis of the nature of the disease is unusually difficult.

Involvement of the gastro-intestinal tract by the various lymphomas—under this broad term Hodgkin's disease, lymphosarcoma, leukemia, aleukemic leukemia and reticulosis may be included—is repeatedly observed at autopsy. From a roentgenologic standpoint, lymphomatous infiltration of the gastro-intestinal tract and more especially of the stomach is of particular interest. The changes produced by this disease in the stomach and upper part of the duodenum are most intriguing because of the difficulty of their recognition during life and the bizarre picture that they present in the roentgenogram. In spite of the many cases of this type reported, there are very few on record in which the diagnosis was successfully made by means of roentgen examination. In the vast majority of the cases, the character of the infiltration was such that the roentgen examination led to a diagnosis of carcinoma rather than of lymphogranuloma.

In the case of leukemia, regardless of the leukemic or aleukemic state of the blood, two types of abnormality of the stomach may be observed on roentgen examination. In the first there is a rather localized infiltration, often near the pylorus, with a marked constriction of the lumen of the stomach. An exactly similar appearance is presented by the other lymphomas. This picture resembles that of scirrhous carcinoma; occasionally the infiltration is so bulky as to simulate a polypoid carcinoma. Likewise lymphogranulomatous infiltration of the duodenum, as well as of other portions of the small bowel, may present a diffuse infiltrating process with stenosis and obstruction.

There is a second type of abnormality occurring with leukemia; it presents a more characteristic roentgen picture which may, perhaps, lead to a specific diagnosis. As early as 1857, Leudet [1] recorded the observation, at an autopsy in a case of leukemia, of a stomach in which the mucosa was elevated. Again in 1895 de Roth [2] called attention to this phenomenon and noted the resemblance of the rugae to the appearance of the convolutions of the brain. It has been reported from autopsies on many occasions since that time.[3] Both cases of chronic lymphatic leukemia, so-called pseudoleukemia, aleukemic leukemia, and even a few cases of Hodgkin's disease, have been noted as producing this remarkable enlargement of the folds of mucous membrane of the stomach. Schlagenhaufer [3] in 1920 again likened their appearance to that of the gyri of the brain. The case reported by Ikeda,[3] to which I have been fortunate enough to have access, illustrates admirably the characteristic pathologic changes that are present in the stomach. Another such case, from the records of the department of pathology of the University of Minnesota, is shown in figure 1. This shows the opened stomach, removed at autopsy, in a case of chronic lymphatic leukemia. Microscopic study revealed the typical manifestations of leukemic infiltration of the gastric mucosa. Figure 1 demonstrates well the greatly enlarged, tortuous, somewhat rigid gastric rugae, which appear to be characteristic of leukemia.

A systematic report on the roentgen changes in the lymphogranulomas of the stomach was presented by Holmes, Dresser and Camp [3] in 1926. They stressed the difficulty encountered in making this diagnosis, but they had apparently not observed any cases of the type just described. Biggs and Elliott [3] had previously reported such a case with roentgen examination but the latter was not characteristic and hardly resembled the picture seen at autopsy. Their case was one of aleukemic leukemia. Ruggles and Stone,[4] in the course of a report of eleven cases of lymphoblastoma of the stomach, noted in the roentgenograms of some of these a close resemblance to multiple polyposis; one of their illustrations suggests, to some extent at least, the type of case discussed here. In 1933 Mead [5] reported a case of lymphatic leukemia in which I made the roentgen examination of the gastro-intestinal tract. The stomach presented a very bizarre appearance. It was greatly enlarged and the rugae were of tremendous size, with marked tortuosity. Similar changes were found in the duodenum. The roentgen changes were interpreted as being due to an extreme grade of hypertrophic gastritis or an unusual form of multiple polyposis. Later a

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1. Leudet, E.: Compt. rend. Soc. de biol. **9-10:** 73, 1857-1858.
2. de Roth, G.: Contribution à l'étude de la leucémie et de ses complications, thesis, Geneva, 1895.
3. These reports include:
Wells, H. G., and Maver, M. B.: Am. J. M. Sc. **128:** 837, 1904.
Symmers, Douglas: The Relationship of the Toxic Lymphoid Hyperplasias to Lymphosarcoma and Allied Diseases, Arch. Int. Med. **21:** 237 (Feb.) 1918.
Schlagenhaufer, F.: Virchows Arch. f. path. Anat. **227:** 74, 1920.
Biggs, A. D., and Elliott, A. R.: Pseudoleukemia Gastro-Intestinalis, J. A. M. A. **83:** 178 (July 19) 1924.
Ikeda, Kano: Am. J. Clin. Path. **1:** 167 (March) 1931.
Boikan, W. S.: Leukemic Changes of the Gastro-Intestinal Tract, Arch. Int. Med. **47:** 42 (Jan.) 1931.
Holmes, G. W.; Dresser, R., and Camp, J. D.: Radiology **23:** 17 (July) 1926.
Jørgensen, J. V.: Ugeskr. f. læger. **97:** 327 (March 14) 1935.
4. Ruggles, H. E., and Stone, R. S.: California & West. Med. **33:** 486 (July) 1930.
5. Mead, C. H.: Radiology **21:** 351 (Oct.) 1933.

tumor mass was also found in the cecum. At operation the changes in the stomach were found to be due partially to infiltration of the gastric wall and partially to enlarged perigastric lymph nodes, which were shown to be leukemic on microscopic examination.

Since then Lüdin [6] has reported one case of aleukemic leukemia with this characteristic picture in the roentgenogram. The rugae of the stomach were greatly enlarged and tortuous. A biopsy, showing lymphatic

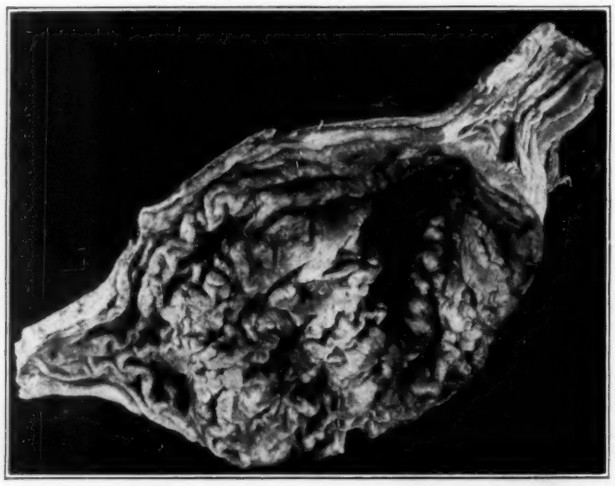

Fig. 1 (case 1).—Opened stomach removed at autopsy in a case of chronic lymphatic leukemia. Leukemic infiltration was proved microscopically. Note the greatly enlarged, tortuous rugae resembling the convolutions of the brain. Compare with figure 2.

infiltration of the lymph nodes, led to the diagnosis of leukemic infiltration of the stomach. Later the blood picture changed and presented the evidences of chronic lymphatic leukemia; at autopsy this finding was confirmed. The roentgenologic appearance was shown to be caused partially by the hyperplastic, greatly enlarged rugae, and partially by the pressure of the enlarged perigastric lymph nodes. At about the same time Koch [7] reported two cases with this roentgen picture in both of which the diagnosis of carcinoma of the stomach had been erroneously made. In one patient there was demonstrated at autopsy a chronic lymphatic leukemia; in the other the final diagnosis was lymphogranuloma, but the type was not stated. In 1934 Holmes [8] called attention to this roentgenologic appearance and suggested that it might be pathognomonic of lymphoblastomatous involvement of the stomach.

As already noted, in many instances of leukemic infiltration of the gastro-intestinal tract the blood picture may be normal. This, naturally, has made the diagnosis most difficult; any procedure, such as a roentgen examination of the stomach, which would throw light on the diagnosis, would be of distinct value. With this in mind, attention is again called to the characteristic roentgenologic appearance that leukemia of the stomach may present. The following case is reported to indicate that it may be possible to make this diagnosis even in the presence of an aleukemic state of the blood:

CASE 1.—A white man, aged 69, complained on admission of masses in the mouth, cheeks and neck. These had been present for two years, during which time he had become weak and tired. The past history was without significance. There were no complaints referable to the stomach.

Physical examination revealed small masses in the floor of the mouth and near the tonsils. There were palpable masses under the left mandible, in both cervical, axillary and inguinal regions, of small size. The salivary glands all appeared enlarged and later there appeared some enlargement of the lacrimal glands. The skin over the neck was indurated. In addition there was a basal cell carcinoma near the outer canthus of the eye.

Examination of the blood on numerous occasions gave entirely normal results. The hemoglobin was 85 per cent; the red blood corpuscles numbered 4,960,000; the white blood cell count ranged from 7,600 to 9,000. Differential counts gave neutrophils 56 per cent, lymphocytes 38 per cent, monocytes 6 per cent. The percentages and total count varied from time to time but were substantially similar. No abnormal cells could be detected at this time. There were no other laboratory observations of significance.

Biopsies of a cervical lymph node and of the skin revealed a leukemic infiltration of characteristic type, so a diagnosis of aleukemic leukemia was made.

Roentgen therapy was applied to the enlarged lymph nodes, the salivary glands, the lacrimal glands and the skin. Treatment was also given to the basal cell carcinoma. Rapid and complete disappearance of the abnormalities ensued except for the inguinal and axillary lymph nodes, which remained palpable.

Fifteen months later the patient was again examined. At this time he complained of acid eructations. The lymph nodes were still palable in the axillary and inguinal regions, but there were no other abnormalities.

Three years after his original admission he returned, complaining of severe pain in the epigastrium coming on shortly after the intake of food. There was a heavy feeling with much gas, and all solid food was distressing. Some loss of weight had occurred and he had severe constipation. The physical examination was essentially negative but a tentative diagnosis of carcinoma of the stomach was made and he was sent in for roentgen examination of the stomach.

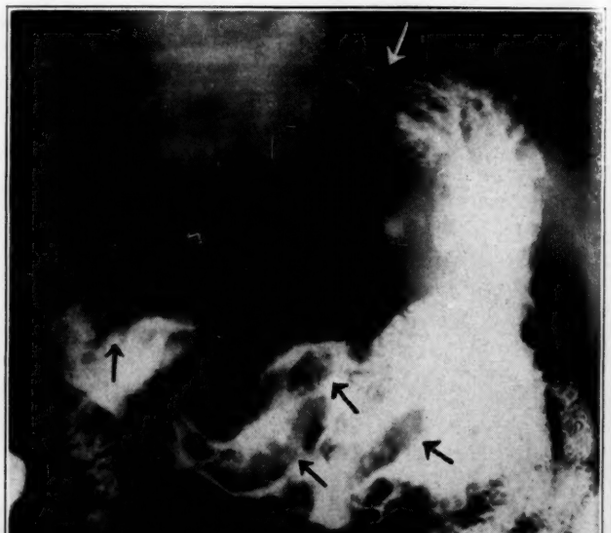

Fig. 2 (case 1).—Aleukemic leukemia: Roentgenographic appearance of stomach with small amount of barium sulfate and pressure on Oct. 17, 1934. Moderate sized stomach with enormously hypertrophied rugae, which are very tortuous and irregular, is shown. Marked increase in the folds of mucous membrane throughout the stomach, even involving the distal end of the esophagus. Enormous size of the folds is shown, indicated by the arrows. Involvement of the duodenal bulb by the same type of process is shown (arrow). Compare with figure 1.

The stomach was moderately dilated and showed a remarkable enlargement of the rugae throughout (fig. 2). These were irregular and tortuous and could hardly be obliterated even with the stomach overfilled. There was marked hypertrophy of the mucosa on the lesser curvature as well as on the greater. Peristalsis, flexibility and mobility of the stomach were normal. There was a distinct enlargement of the folds of mucous mem-

6. Lüdin, M.: Röntgenpraxis **5**: 816 (Nov.) 1933.
7. Koch, C. E.: Fortschr. a. d. Geb. d. Röntgenstrahlen **48**: 271 (Sept.) 1933.
8. Holmes, G. W.: Radiology **23**: 17 (July) 1934.

brane in the distal end of the esophagus, and the duodenum showed much the same appearance as the stomach. Without any knowledge of the previous history, the following roentgenologic diagnosis was made: "Probable leukemic infiltration of the esophagus, stomach and duodenum. Possibility of extreme chronic hypertrophic gastritis to be considered."

Roentgen examination of the colon showed no abnormality. Reexamination of the stomach gave the same results.

Analysis of the gastric contents showed total acids from 59 to 86 units, free hydrochloric acid from 36 to 73 units.

The patient was put on an ulcer management for two months without relief. Gastroscopy was done but the results were indeterminate.

He was then admitted to the hospital for radiation therapy. Sixty per cent of a skin erythema dose of x-rays at 200 kilovolts was administered over the anterior gastric area and 30 per cent of a skin erythema dose was given over the posterior abdominal wall in the gastric region in three doses within twelve days. A total of 645 roentgens was administered. The leukocyte count dropped to 2,050 and the treatments were discontinued. It rose shortly to 3,750 and later to 5,900, but no further treatments to the stomach were given. He had developed, before these treatments, a considerable degree of anemia (hemoglobin 63 per cent), and this persisted.

Within two weeks there was a remarkable improvement in the gastric symptoms, and a month after the treatments the symptoms had practically disappeared. Roentgen examination of the stomach within three weeks after the treatments revealed a marked decrease in the size of the gastric rugae, and after three months (fig. 3) the picture had changed considerably. While the rugae were still somewhat above normal in size, the decrease had been most striking. The stomach as a whole was smaller and the improvement was unmistakable.

Later the axillary lymph nodes enlarged and were treated with x-rays, Gastric symptoms recurred and irradiation of the stomach was again instituted. Shortly thereafter the spleen became palpable for the first time. It was irradiated, with a prompt decrease in size. Repeated enlargements of various groups of lymph nodes occurred thereafter and the spleen became markedly enlarged. Later the liver also enlarged and the anemia became more pronounced. Blood smears at this time began to show many atypical and immature lymphocytes. The patient became weaker and died about four years after he was first admitted. Autopsy could not be obtained.

This case is of particular interest because of the characteristic roentgen picture and the typical response to roentgen therapy, which might be expected from leukemic infiltration. While the blood was normal until shortly before death, the microscopic examination of the biopsies of a lymph node and of the skin established the nature of the disease. Furthermore, the late enlargement of the spleen, the enlargement of numerous groups of lymph nodes and their characteristic response to irradiation confirmed the diagnosis of aleukemic leukemia. Certain facts should be noted in detail: The stomach was extensively and very diffusely involved but was increased rather than reduced in size. The folds of mucous membrane were greatly hypertrophied, sinuous, irregular and equally prominent on the two curvatures. Peristalsis, mobility and flexibility of the stomach wall were well preserved. What is even more significant, the first portion of the duodenum was affected in an exactly similar way, a most important sign to distinguish this lesion from carcinoma. This particular finding has been emphasized in recent reports of this condition. A comparison of figure 2 with figure 1 indicates clearly the close correlation between the roentgen signs and the gross pathologic changes of this condition. The rapid and striking response to radiation therapy, particularly the roentgen demonstration of reduction in the size of the rugae, is also confirmatory evidence of the nature of the disease. This reaction represents here, as elsewhere in the body, an important therapeutic test for leukemic infiltration. It would seem that all these roentgen changes should be characteristic of lymphoblastomatous involvement of the stomach.

In searching for other cases of this type, a number of patients have been observed in whom extreme enlargement of the rugae of the stomach is present without any signs of leukemia, aleukemic leukemia or any other lymphomas being present. These are cases which ordinarily might be classified as chronic hypertrophied gastritis except that the enlargement of the folds of mucous membrane is far beyond that usually found and are diffuse throughout the stomach. One of these cases is detailed here to indicate its resemblance to the case of aleukemic leukemia previously described and to bring out certain differences:

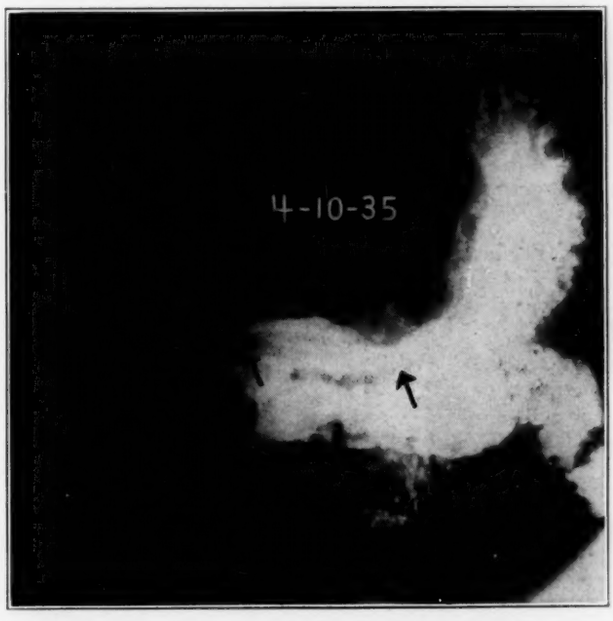


Fig. 3 (case 1).—Aleukemic leukemia: Stomach April 10, 1935, after roentgen therapy. Compare with figure 1. Note striking decrease in size of gastric rugae and general change in mucosal markings, indicating effects of irradiation on leukemic hyperplasia of rugae.

CASE 2.—A white man, aged 36, complained of severe pain in the epigastrium increasing for one year. The pain was worse after heavy meals or hard work. There was nausea, no vomiting, no qualitative food distress, and no relief from food or medication. The appetite was normal and there was a slight loss of weight. An appendectomy had been performed four years before and he had had a hernia for one year.

The physical examination was entirely negative except for the evidences of a right indirect inguinal hernia. Slightly palpable inguinal nodes were found but were not more prominent than usual. No other enlarged lymph nodes were found and the spleen was never palpable.

Roentgen examination of the stomach with a barium sulfate meal was done. The stomach was normal in size but showed a generalized striking increase in the size of the gastric rugae (fig. 4). These were sinuous and not readily compressed. Mobility and flexibility of the stomach were normal, while the peristaltic activity was increased throughout the stomach. The first portion of the duodenum showed also a marked hypertrophy of the mucosa, the appearance simulating that in the stomach. No evidence of ulcer or tumor was obtained. The roentgenologic diagnosis was "chronic hypertrophic gastritis and duodenitis of marked degree. Possibility of leukemic infiltration must be considered."

Cholecystography revealed a normally functioning gallbladder. Reexamination of the stomach produced the same results.

Repeated studies of the blood were made. The hemoglobin ranged from 90 to 100 per cent. The red blood cell count was 4,900,000. The count of white blood cells ranged from 8,800 to 11,900, being persistently slightly higher than normal. Neutrophils ranged from 57 to 71 per cent; lymphocytes ranged from 22 to 36 per cent. The eosinophils were constantly increased above the normal, ranging from 3 to 13 per cent. There were no immature or abnormal cells.

Analysis of the gastric contents gave total acids from 12 to 41 units, free hydrochloric acid from 8 to 32 units. All other laboratory tests were negative.

He was placed on bed rest and a restricted diet regimen for five weeks without any particular relief or any change in the roentgen signs.

Irradiation of the stomach was proposed with two possibilities in mind. If this was a case of aleukemic leukemia with leukemic infiltration of the stomach, a rapid and favorable response might be expected. It was also considered possible that the lymphocytic infiltration that occurs in chronic hypertrophic gastritis might be favorably affected by irradiation. Accordingly he was given a moderate dosage of x-rays at 200 kilovolts, 90 per cent of a skin erythema dose being applied over the anterior wall of the abdomen in the stomach area in

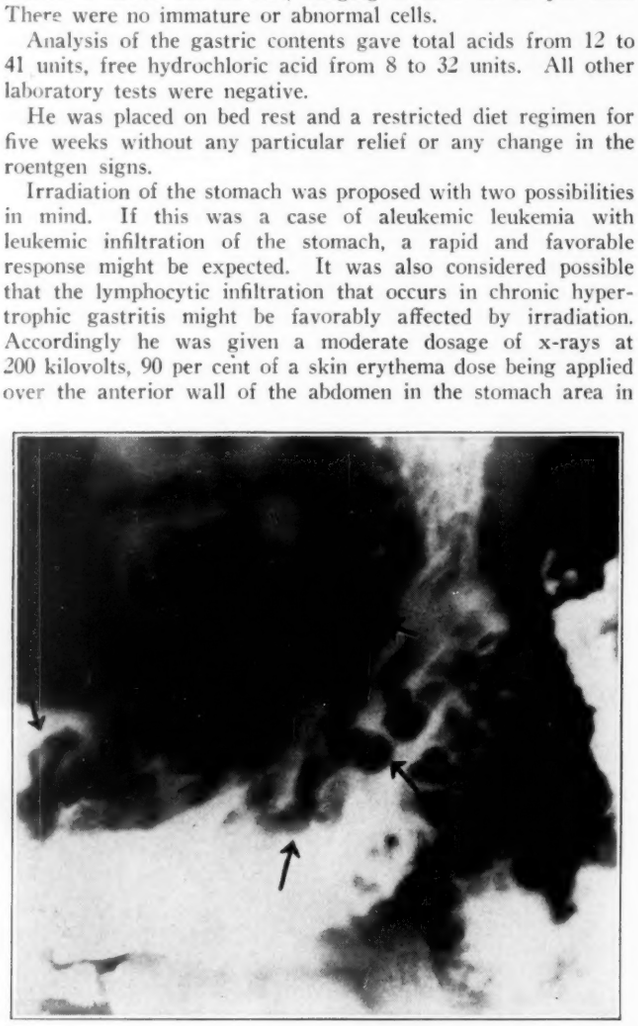

Fig. 4 (case 2).—Chronic hypertrophic gastritis without evidence of leukemia. Note markedly enlarged rugae of stomach (arrows) and similar involvement at base of duodenal bulb (left arrow). Note how this picture resembles that of previous case shown in figure 1.

three treatments over a period of twenty-four days. A total of 645 roentgens was given. Two months later 860 roentgens was given in much the same manner.

There was little or no response to this treatment. The blood remained about the same; the symptoms were not affected after the first reaction to the irradiation had been overcome. Reexamination of the stomach with the barium sulfate meal showed no appreciable change. The patient has been followed for eighteen months and numerous forms of treatment have been instituted without success.

The roentgen signs remain about the same.

Gastroscopy was recently attempted but was unsuccessful because of inability to pass the tube.

The roentgen appearance in this case is similar to those previously discussed. The rugae of the stomach are greatly enlarged, tortuous and irregular; the changes in the duodenum are similar. The intensive studies of the blood and the physical examination, however, have revealed no evidence whatever to suggest the presence of leukemia. Obviously, the latter cannot be entirely excluded without long continued observation, but during a period of eighteen months there has never been any enlargement of the spleen or any of the remaining lymphatic apparatus. What is even more significant is the signal failure of response to radiation therapy. There was no relief of symptoms and no diminution in the size of the mucous membrane folds.

It seems evident that this picture of marked enlargement of the rugae of the stomach is not entirely pathognomonic of lymphoblastomatous infiltration but when encountered should arouse suspicion of this condition in every instance. Differentiation from nonmalignant hypertrophy of the gastric mucosa may possibly be made by means of a therapeutic test with irradiation. The rapid and favorable response of the leukemic case is in sharp contrast to the failure of irradiation in the simple hypertrophic gastritis.

## SUMMARY

1. Leukemic infiltration of the stomach may produce a striking picture of enormously enlarged gastric rugae resembling the convolutions of the brain. Involvement of the duodenum is usually found.

2. Radiation therapy will cause a marked reduction in the size of these folds and a corresponding improvement in the gastric symptoms presented by the patient.

3. The roentgen signs in the stomach may be obtained regardless of whether or not blood changes are present.

4. Other lymphogranulomas may possibly produce a similar appearance.

5. Chronic hypertrophic gastritis of extreme grade may simulate these roentgen appearances. Radiation therapy may possibly serve as a therapeutic test, as it does not appear to produce any change in the symptoms or roentgen signs in these cases.

## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. WISEMAN, O'BRIEN AND RIGLER

DR. ROSS GOLDEN, New York: Dr. Rigler is quite right in saying that this leukemic infiltration may be simulated by other forms of this group of diseases. I have had at least four cases in which the pathologists made a diagnosis of lymphosarcoma and the roentgen picture could easily be confused with what he has shown. Martin described a helpful point, that the involvement in so-called lymphoblastoma of the stomach may be multiple; that is, of the fundus and also of the pyloric part or the simultaneous involvement of the duodenum and the stomach. He also pointed out the exaggeration of the mucosal folds. However, exaggeration of the mucosal folds may be present in other conditions. In a number of instances when a neoplasm, not typical of carcinoma, was present with exaggeration of the mucosal folds, the possibility of lymphoblastoma has been suggested only to have the biopsy disclose carcinoma. Unless the duodenum is involved, the diagnosis of lymphoblastoma of the stomach is very difficult and is likely to be wrong. A very important step is to think of the possibility of the disease. The attempt to diagnose it is well worth while because of the very satisfactory response to radiotherapy. One patient, an employee of the hospital, is now alive and well four years after operation for a perforated lymphoblastoma of the stomach. Dr. O'Brien repeated the statement frequently encountered in the literature that roentgen therapy probably prolongs but slightly, it at all, the life of the patient, although it may greatly improve his physical condition. This statement, to which I am unable to subscribe, seems to me to deserve further and much more critical analysis. The site of onset of Hodgkin's disease may be roughly classified under four headings: first, and probably the most common, is the peripheral lymph nodes; second, the chest, usually the mediastinum; third, the abdomen, often the gastro-intestinal tract, and, fourth, the osseous system. The last is quite uncommon in my experience, although I have seen two or three cases of it. This disease

may kill a patient early in its course by interfering with some vital function, such as respiration, by producing tracheal compression. Roentgen therapy, if properly applied, may for years prevent tracheal compression, intestinal obstruction, perforation of a viscus, and a number of other complications that may result in very early death of the patient. Obviously, peripheral lymph node involvement offers no immediate threat to life. If the patients live long enough, the disease almost invariably becomes generalized; bones and the abdominal lymph nodes, as well as peripheral lymph nodes, may be involved, and at the end it is sometimes hard to tell just what the mechanism of death may be. I should like to see such a series of cases analyzed from the standpoint of the site of onset. I believe that would give a different picture of the part played by roentgen therapy in Hodgkin's disease.

DR. ISRAEL DAVIDSOHN, Chicago: I should like to emphasize the remarks Dr. Wiseman made with regard to the necessity of a more careful study of the morphologic features of the blood. He is right when he demands that the finer phases of the examination of diagnostic importance should be carried out by an expert. However, I wish to take issue with his remark in which he stated that the blood count should not be done by the technician. I hope he will elaborate on that point, because I am afraid that soon some of my colleagues will be told that they should not have their technicians do any more blood counts. That might create a difficult situation. I hope that Dr. Wiseman will agree with me that the quantitative part of the count can be done by a good technician, but I agree that for details of the morphologic study of the blood smear the expert must be responsible, particularly in complicated cases. I should like Dr. Wiseman's opinion on blood examination in mycosis fungoides, which is of considerable interest to radiologists. I have seen cases in which the blood examination gave results indistinguishable from those commonly seen in Hodgkin's disease.

DR. B. K. WISEMAN, Columbus, Ohio: Examination of the blood is one of the oldest of laboratory methods for obtaining facts concerning disease. It is also one of the youngest. The older technics, in which use was made of fixed, stained and therefore necessarily dead cells, continues to be a valuable method for the study of blood cells. However, the recent advances that have been made, particularly by the Sabin school, in which living cells stained with vital dyes are utilized, has added so much to our concepts relating to the pathologic physiology of blood formation that no hematologist today can disregard this newer hematology. With the addition of this most important refinement to cytologic study, hematology has evolved from a laboratory procedure dominated largely by technicians to a science requiring the efforts of the most skilled and highly trained cytologists. Experience has convinced me that blood "counts" executed in the time honored way well deserve the disapprobation so often accorded them by clinicians and must be replaced by adequate examinations in which technical methods are executed by physicians possessing adequate comprehension of the cytology of blood cells and the basic principles of the physiology and pathology of the blood-forming tissues. Failing in this, much if not most of the value in interpretation of the changes in the blood will be lost. Due recognition is accorded the fact that the conditions as outlined cannot as yet be met generally; nevertheless, this objective is not impossible to attain if its importance is fully recognized. These remarks refer, of course, only to the critical examination of the blood cells; mechanical procedures, including total counts, reticulocyte and platelet counts and hemoglobin estimations, properly belong in the domain of the technicians. Relative to the blood observations in mycosis fungoides, I am compelled to evade a direct answer to this question on the ground that identification of this clinical state is uncertain when reference is made to a clear-cut pathologic lesion. I recall two cases presenting the pathology of the skin lesion resembling Hodgkin's granuloma, in which a blood picture was obtained similar to that of systemic Hodgkin's disease. Other cases with indefinite pathologic appearance showed a blood picture correspondingly not characteristic of any particular disease syndrome.

DR. F. W. O'BRIEN, Boston: I think that Dr. Golden's point is well taken, and when I talk about survival rate of course I do not mean that roentgen irradiation is not a life-saving measure. I think it is something more than the palliation gesture to which Dr. Wiseman refers. Quite as much is done with it as with any of the chronic kidney diseases or chronic heart diseases, but considering the natural history of these diseases, some patients are destined to live a long time. One case in the Boston City Hospital I have followed for twenty-six years, and three biopsies have been made. Another patient, operated on fourteen years ago, is living after seventeen years. Neither has had any kind of roentgen irradiation. I am sure that if we had treated them we would have felt, as Gilbert and his associates do, that the disease had gone through a stage of evolution, as he describes it. It comes back again to the point Dr. Golden made, that the site of the disease has a great deal to do with the prognosis, and if we ever get a large enough group of cases I hope to analyze the group according to that idea.

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# THE SURGICAL RELIEF OF IMPOTENCE

## FURTHER EXPERIENCES WITH A NEW OPERATIVE PROCEDURE

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AND
JAMES L. BRAY, M.D.
NEW YORK

The value of an operative procedure is determined only by the results obtained and the permanence of these results. This is especially true in an operation that has been designed for the cure of impotence. Immediate results are often misleading, and it is only by experience with many patients for a long period of time that one is able to choose the type of case suitable for the operation, to modify the operative technic if necessary, and last, but not least, to state with a fair amount of accuracy the result that will be obtained.

About one year and nine months has elapsed since the first patient was operated on for the relief of impotence by a new method developed by the senior author. The operation was first performed in the Department of Experimental Surgery[1] at the New York Hospital.

The first patient operated on has shown no reduction in his sexual competence, and the other patients successfully operated on have remained cured.

The present communication is not concerned with impotence due to syphilis, cerebrospinal lesions or glandular deficiency but with sexual inefficiency resulting from (1) traumatism of the perineum following an external blow or surgical operation, (2) inflammatory lesions of the perineum resulting in extensive scar formation, (3) lack of muscle tone, and (4) advancing age. Our particular concern is with the first, third and fourth groups—those who are impotent because of traumatism to the perineum and the older group of men, who have ample libido, normal testicles and hence normal secretion of the sex hormones, and no interference with the nervous tracts involved in the sexual act, but who cannot have erections because of failure of the physiologic activities of this part of their anatomic structure.

Much experimental work has been done in an endeavor to relieve impotence in the many whose libido is unimpaired but whose sexual efficiency is diminished or absent.

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Owing to lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the reprints, a copy of which will be sent by the authors on receipt of a stamped addressed envelop.

1. The authors are indebted to Profs. George Heuer and Joshua Sweet for their cooperation in the conduct of the animal tests necessary for these experiments.

### OPERATIVE AND NONOPERATIVE TREATMENT OF IMPOTENCE

Treatment of impotence may be divided into general and local. Surgical treatment, with which we are here primarily concerned, is of course a local measure. General measures are chiefly medical and physical therapeutic.

In some cases of organic impotence—for example, those due to induration of the penis—operation has

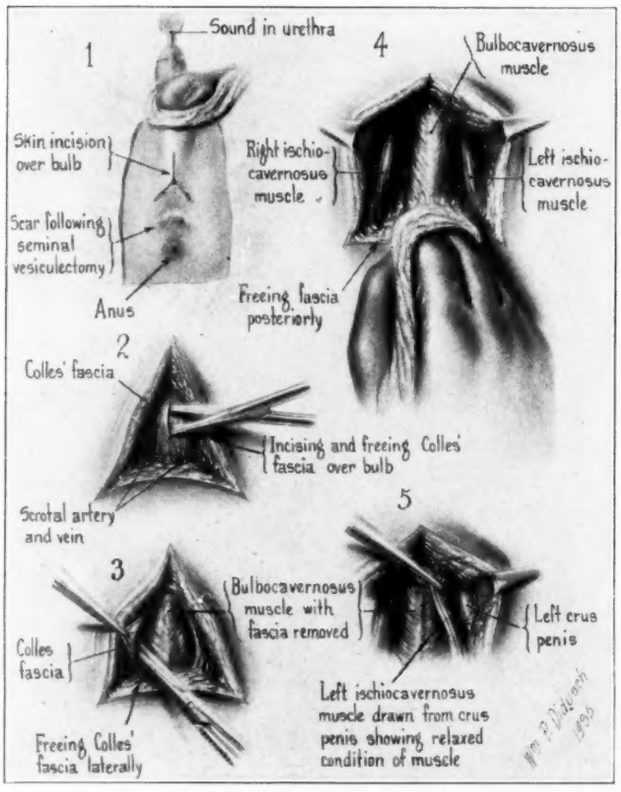


Fig. 1.—Operation for impotence: 1. Skin incision with sound in urethra. 2. Incising and freeing Colles' fascia over bulb. 3. Freeing Colles' fascia laterally over ischiocavernosus muscle. 4. Freeing Colles' fascia posteriorly. 5. Left ischiocavernosus muscle held up, showing relaxed condition of muscle.

often proved worse than useless, so that palliative treatment is resorted to even in cases apparently well suited to surgery.

The theory underlying ligation of the dorsal vein is similar to that on which are constructed the mechanical devices obtainable for assisting erection. These function by compressing the veins and preventing their too rapid emptying, thus maintaining the penis in a turgescent state. As Wooten [4] explains it:

> In atonic impotence there is a loss of tonicity in all of the tissues, and a relaxed dilated condition of the veins and sinuses. The ligation of the dorsal vein cuts off the main exit of venous blood and collateral circulation eventually takes its place.

Transplantation of the testicle, advocated by Lespinasse [5] nearly twenty years ago, received wide newspaper publicity and was generally referred to as the "monkey gland operation" or "rejuvenation." Lespinasse himself made no such fantastic claims. Believing that most cases of impotence were due to failure of internal secretions, he at first attempted to correct this, in men young enough to have active endocrine glands, by the administration of glandular extracts. Later he conceived the idea of grafting slices of human testicle, taken from a living or recently dead subject, between the layers of the rectus muscle. The testicle to be implanted was cut into slices from 1 to 2 cm. thick; these were denuded of the tunica albuginea and placed in a bed previously prepared for them in the rectus muscle. The muscle sheath was sewed with catgut and the skin with silkworm gut. In most cases the transplants absorbed within a few months, and the potency of the individual declined to its former state. Those cases in which the operation appeared to have accomplished its purpose were probably instances of psychic impotence, with no actual loss of sexual power. The operation had a very limited application owing to the difficulty of procuring material for grafting. Occasionally men were found with a functioning testicle in the scrotum and an ectopic testicle in the inguinal canal or elsewhere, requiring surgical removal and with which they were willing to part for a substantial consideration. In still rarer instances the testicles of suicides and of executed criminals would be available.

Stanley [6] of California produced the same result by injecting sterile particles of sheep's testicles with wide bore needles.

With the idea of conserving the internal secretions essential to virilty, some surgeons have tied off the vas deferens. This was done several generations ago in

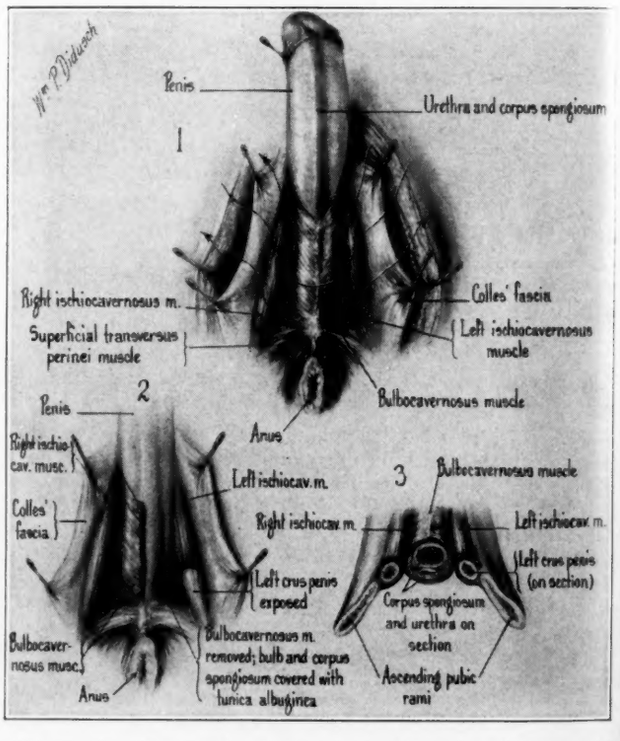


Fig. 2.—Operation for impotence: 1. Anatomy of perineum; muscle of perineum involved in plication procedure; method of placing plication sutures. 2. Left side of bulbocavernosus muscle removed, showing left crus penis. 3. View on section, showing muscles—crura, urethra and corpus spongiosum; shows how the muscles surround the corpus spongiosum and the crura and the action that plication of these muscles would cause.

an attempt to reduce prostatic hypertrophy. Hirsch's [7] comment on this procedure was as follows:

> Let us grant that blockage of the vas will increase the vital secretions produced by the cells of Leydig. Can we picture such substances remaking new penile arteries; or causing the calcium deposits within the vessel walls to absorb; or dissolving

4. Wooten, J. S.: Ligation of the Dorsal Vein of the Penis as a Cure for Atonic Impotence, Texas M. J. **18**: 325, 1902-1903.
5. Lespinasse, V. D.: Impotency: Its Treatment by Transplantation of the Testicle, Surgical Clinics, Chicago **2**: 281 (April) 1918.
6. Stanley, L. L.: An Analysis of One Thousand Testicular Substance Implantations, Endocrinology **6**: 787 (Nov.) 1922.
7. Hirsch, E. W.: Sexual Impotence of Organic Origin, Clin. Med. & Surg. **37**: 350 (May) 1930.

the scar tissue which has replaced the intima of the helocine arteries? The urologist cannot remake tissue. Some cases are beyond his aid; others he can improve; and some he can return to a normal condition. No one has ever been able to make young tissue out of old tissue, and the urologist should not be expected to accomplish the impossible.

Ligature of the vas is, of course, the much publicized Steinach operation. The idea did not originate with Steinach but was proposed in 1903 by the French

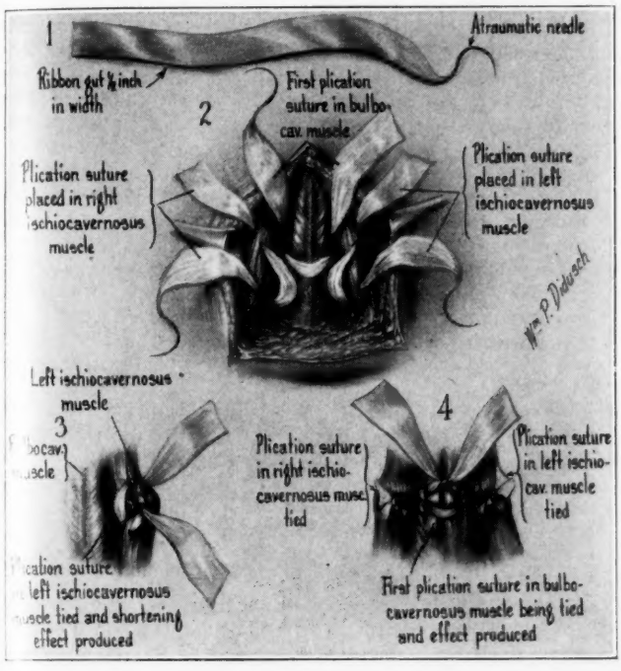
1
Atraumatic needle
Ribbon gut ¼ inch in width
2
First plication suture in bulbocav. muscle
Plication suture placed in right ischiocavernosus muscle
Plication suture placed in left ischiocavernosus muscle
Left ischiocavernosus muscle
3
Plication suture in left ischiocavernosus muscle tied and shortening effect produced
4
Plication suture in right ischiocavernosus musc. tied
Plication suture in left ischiocav. muscle tied
First plication suture in bulbocavernosus muscle being tied and effect produced

Fig. 3.—Operation for impotence: 1. Piece of ribbon gut, threaded on needle to be used in plication. 2. Method of placing the ribbon gut plication sutures in the bulbocavernosus and the ischiocavernosus muscles. 3. Shortening effect caused by plication suture in left ischiocavernosus muscle. 4. Plication sutures placed in right and left ischiocavernosus muscles and the tightening effect produced by placing plication suture in bulbocavernosus muscle.

scientists Ancel and Bouin, who noted that ligation of the vas in some of their experimental animals greatly enhanced sexual desire and that the interstitial cells of the testicle increased in number at the expense of the cells concerned in spermatogenesis. This suggested that shutting off the avenues of sperm formation would heighten production of the secretion especially concerned with sex desire; that is, the sex hormone as distinguished from the seminal fluid. Steinach carried his experiments much further and reported some wonderful returns of sexual power in bulls, in rams and later in human beings. Many, both here and abroad, followed his teachings.

Because ligation of the vas sometimes causes formation of a spermatocele, Sand and Tournade proposed a partial epididymectomy instead of the vas ligation. Several centimeters of the upper part of the epididymis was freed from the testicle proper without injuring the blood vessels, and the freed portion was resected between ligatures.

Comment is unnecessary regarding the advisability of employing the previously mentioned mechanical contrivances for encouraging and maintaining erection, or splinting a flaccid penis so that intromission might be accomplished in the absence of erection.

Huhner [8] has devoted a great deal of study to the relation of chronic inflammation and pathologic changes in the prostatic urethra to sexual inefficiency and considers local treatment of the verumontanum, by irrigations and instillations, all important. Other authors have reported good results from treatment directed to the verumontanum.

For many years one of us has used subcutaneous injections of a specially prepared alcohol extract of gonads, adrenal and anterior pituitary in an attempt to boost the internal secretions of the patient, with many favorable responses.

Diathermy and hydrotherapy likewise have their ardent advocates. However, those who have obtained the best results through employment of these measures are unable to tell precisely whether the treatment actually did good of itself or was merely instrumental in changing the patient's psychic outlook. Wallace [9] found that a number of his "psychic cases" had four plus Wassermann reactions and that vigorous antisyphilitic treatment resulted in complete recovery of some of the younger patients. In cases in which tertiary effects had caused definite nerve injury, no help was possible.

Perusal of the literature leads to the impression that the views of physicians and surgeons remain unchanged despite the introduction of new methods and advances

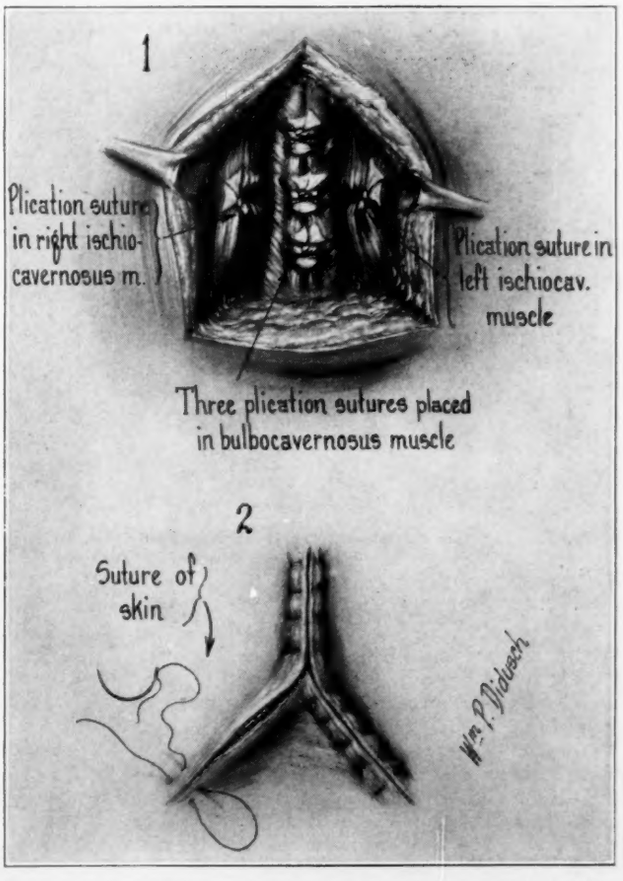
1
Plication suture in right ischiocavernosus m.
Plication suture in left ischiocav. muscle
Three plication sutures placed in bulbocavernosus muscle
2
Suture of skin

Fig. 4.—Operation for impotence: 1. All plication sutures placed and tied; shows the result produced by sutures. 2. Final skin closure.

in glandular therapy. The curable cases are largely psychic and dependent on some functional disturbance caused usually by masturbation or excessive sexual intercourse. That a few cases are curable by surgery seems well established; but the patients must be skilfully selected and operated on only after all palliative means have been exhausted.

8. Huhner, Max: Impotence in the Male: Its Practical and Scientific Treatment, M. J. & Rec. **119:** 499 (May 21) 1924.

9. Wallace, W. J.: Impotency in Young Men: Etiology, Pathology and Treatment, J. Urol. **13:** 193 (Feb.) 1925.

### ANATOMICOPHYSIOLOGIC PROCESSES INVOLVED IN ERECTION

Regarding the anatomicophysiologic processes involved in the production of erection, Howell [10] says:

During this act [erection] the penis becomes hard and erect, owing to an engorgement with blood. The structure of the corpora cavernosa and corpus spongiosum is adapted to the function, being composed of relatively large spaces enclosed in trabeculae of connective and plain muscle tissue—the so-called erectile tissue. . . . Eckhard demonstrated the essential facts in the process. This investigator discovered that in the dog stimulation of the nervi erigentes causes erection. These nerves are composed of autonomic fibers arising from the sacral portion of the spinal cord. They arise from the sacral spine nerves, first to third [dog] on each side, and help to form the pelvic plexus. They contain vasodilator fibers to the penis, as well as to the rectum and anus, and also visceromotor fibers to the descending colon, rectum, and anus.

Eckhard,[11] Lovén [12] and others have shown that when these fibers are stimulated there is a large dilatation of the arterioles

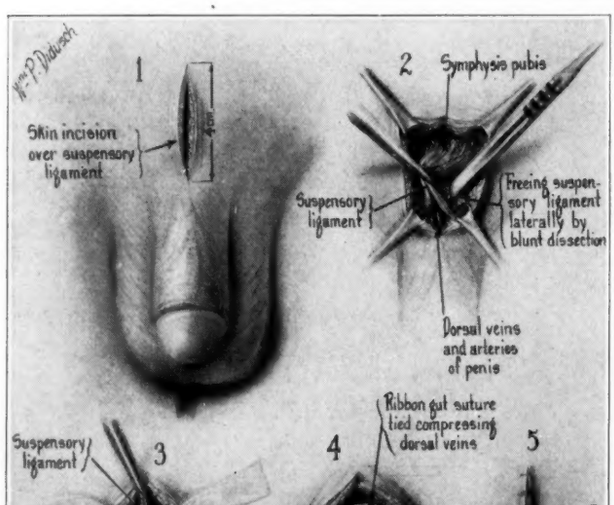


Fig. 5.—Operation for impotence: 1. Skin incision 4 cm. in length over suspensory ligament. 2. Shows blunt freeing of suspensory ligament laterally. 3. Placing ribbon gut suture to constrict suspensory ligament around vessels. 4. Ribbon gut suture tied, compressing dorsal veins. 5. Final skin closure.

in the erectile tissue of the penis and a greatly augmented blood flow to the organ. If the erectile tissue is cut or the dorsal vein is opened, the blood flow under usual conditions is a slow stream, but when the nervus erigens is stimulated the outflow is very greatly increased; according to Eckhard's measurements, eight to fifteen times more blood flows out of the organ. The act of erection is therefore due essentially to a vascular dilatation of the small arteries whereby the cavernous spaces become filled with blood under considerable pressure. The cavernous tissues are distended to the limits permitted by their tough fibrous wall. It seems probable that the turgidity or rigidity of the congested organ is completed by a partial occlusion of the venous outflow, which is effected by a compression of the efferent vein by means of the extrinsic muscles (ischiocavernosus and bulbocavernosus) and possibly by the intrinsic musculature as well. This compression does not occlude the blood flow completely, but serves to increase greatly the venous pressure.

This explanation of the act of erection, while no doubt correct so far as it goes, leaves undetermined the means by which the dilatation of the small arteries is produced. Vasodilator nerve fibers in general are assumed to produce a dilatation by inhibiting the peripheral tonicity of the arterial walls. If this explanation is applied to the case under consideration, it forces us to believe that throughout life, except for the very occasional acts of erection, the arteries in the penis are kept in a constant condition of active tone. Moreover, on this view we should expect that section of the vasoconstrictor fibers to the penis, by abolishing the tone of the arteries, would also cause erection. These constrictor fibers arise from the second to fifth lumbar spinal nerves, and reach the organ by way of the hypogastric nerve and plexus and the pudic nerve. No such result of their section is reported, and it seems that in the matter of erection the actual mechanism of the great dilatation caused by the nervi erigentes still contains some points that need investigation.

Marshall [13] says, in this connection:

The erection of the penis is brought about partly through the contraction of the ischiocavernosus (or erector penis) and bulbocavernosus muscles, certain of the fibers of which pass over the efferent vessels and so arrest the outward flow of blood. The result of this contraction is that whereas the blood can freely enter the dilated vascular spaces of the penis, its exit is retarded, while this leads to a further distention of the vessels, the venous outlets of which became still more compressed. Although the muscular penis mechanism unquestionably assists in the erection of the penis, it is equally clear that it is incapable by itself of causing that phenomenon, since erection can be induced by ligating the efferent veins. Moreover, the penis can be made to erect in animals in which the muscular mechanism has been paralyzed by the injection of curare, but the erection in such cases is incomplete.

Frank Hinman,[14] writing on the subject of priapism, agrees substantially with this opinion:

To this increased inflow in an erection is opposed a partial occlusion of the venous outflow. The efferent veins of the corpora cavernosa pass by way of each crus through the ischiocavernosus muscle, and that of the corpus spongiosum by way of the bulb through the bulbocavernosus muscle. The dorsal vein of the penis is the efferent outlet for the glans and has no constricting muscle other than intrinsic ones. These muscles are supplied by the pudic nerves and their contraction completes the act of erection by compression of these efferent veins which they surround, the occlusion not being complete, but enough to greatly increase the venous pressure in the erectile tissues. In addition to these special muscles there are smooth muscle fibers freely distributed throughout the spongy tissues of the penis, action of which, no doubt, has an intrinsic value in increasing venous pressure.

Henderson and Roepke [15] suggest that skeletal ischiocavernosus muscular contractions may play some minor part in erection of the penis.

Crawford and George,[16] in a series of experiments on dogs conducted with testicular injections, arrive at the conclusion that "1. There seems to be in the testes a specific dilator for the penis. 2. Agents which dilate the blood vessels of the hind limb increase to some extent the volume of the penis."

Carl J. Wiggers [17] expresses the opinion that the increased rigidity is due to the flooding of the cavernous spaces with blood as a result of the dilatation of their afferent arterioles. Compression of external veins by skeletal muscle contraction does not occur. He believes that secondarily the venous outflow from the efferent veins may be impeded, however, owing to compression from within against the rigid outer coat. Erection,

10. Howell, W. H.: A Textbook of Physiology, ed. 12, Philadelphia, W. B. Saunders Company, 1933, pp. 1073-1074.
11. Eckhard: Untersuchungen über d. Erektion d. Penis beim Hunde, Beitr. z. Anat. u. Physiol. **3**, 1863.
12. Lovén: Berichte über d. Verhandl. d. Königl. Sachs. Gesell. z. Leipzig, **8**, 1866.
13. Marshall, F. H. A.: The Physiology of Reproduction, ed. 2, London, Longmans, Green & Co., 1922, pp. 262-267.
14. Hinman, Frank: Priapism, Ann. Surg. **60**: 689-716, 1914.
15. Henderson, V. E., and Roepke, M. H.: The Mechanism of Erection, J. Physiol. **106**: 441-448 (Nov.) 1933.
16. Crawford, A. C., and George, J. M.: The Testes and Certain Vasomotor Reactions of the Penis, J. Urol. **5**: 89-118 (Feb.) 1921.
17. Wiggers, C. J.: Physiology in Health and Disease, Philadelphia, Lea & Febiger, 1934, p. 1092.

which occurs coincidentally, is not due to muscular action but is produced through a mechanical leverage action of the suspensory ligaments attached to the posterior portion of the cavernous tissue.

Samson Wright [18] does not mention the rôle of the ischiocavernosus or the bulbocavernosus muscles in connection with the causation of erection, nor does C. Lovatt Evans [19] in his revised edition of Starling's Principles of Human Physiology.

It is apparent, from a review of the literature, that later writers are less certain of the rôle of the ischiocavernosus and bulbocavernosus muscles in the production of erections. Our experimental work indicates that they are of great importance, but further experimentation must be done before definite conclusions can be drawn.

### ANIMAL EXPERIMENTS

A series of animals was subjected to the operation which was later utilized in human beings for the purpose of determining whether ribbon gut gave the best results and whether tightening of the ischiocavernosus muscle on each side and the bulbocavernosus muscle increase the tendency toward erection. It was found that ribbon gut was successful in all cases tried and that ordinary catgut sutures were entirely unsuccessful for this purpose, the latter causing necrosis and defeating the purpose of the operation.

### HUMAN CASES

The results on animals were so striking that a series of men were operated on with the following technic:

The anesthesia may be either spinal or sacral.

The patient is placed on the operating table in an exaggerated lithotomy position, and a No. 20 French sound is passed into the urethra. An incision is made over the bulging part of the perineum, extending in the midline from a point about 10 cm. from the anal margin down toward that structure for about 5 cm. A branch is then made laterally on each side to a point just above the attachment of the crus penis, the completed incision resembling an inverted Y. The incision is deepened through fat and areolar tissue until the corpus spongiosum, surrounded by the bulbocavernosus, and the crus penis (corpus cavernosum) on each side, surrounded by the ischiocavernosus, are exposed.

Chromic ribbon gut, studded with an atraumatic needle, is inserted into the lateral edge of the muscularis bulbocavernosus, pulled across the belly of the muscle and passed through the other side, with just sufficient strain to plicate the muscle and produce the exact amount of pressure to reinforce any contraction necessary to aid in producing an erection. Two other similar stitches may be necessary to tighten the whole muscle. A figure-of-eight ribbon gut suture is inserted into the ischiocavernosus muscle on each side, care being taken not to injure or unduly compress the fairly numerous nerves and blood vessels in this area. By tightening the suture a reef is taken in the muscle, thus shortening it by approximately 1 inch (2.5 cm.). The wound is closed in layers without drainage.

### MODIFICATION OF THE OPERATION

Owing to the fact that a few patients, three in number, were relieved of their impotence for a short time and then began to show deficiency again, it was discovered that the dorsal veins of the penis had widened, allowing the extensive collateral circulation to interfere seriously with the stasis necessary for the production and maintenance of erection.

It was therefore decided to interfere with the collateral circulation on the dorsum of the organ. This was accomplished by inserting a ribbon gut ligature through each leaf of the suspensory ligament, and when this ligature is tied, compression is made on the vessels draining the dorsum of the penis, thus aiding in the necessary stasis instead of being a detriment to it.

This modification was so successful in relieving the three cases involved that it has now been adopted and utilized in every case.

A brief summary of the thirty-three cases in which operation was done is presented in the accompanying table.

### TYPES OF CASES IN WHICH OPERATION SHOULD NOT BE DONE

It has been found that the muscles of men over 60 years of age are infiltrated with fat and for such cases this operation is not suitable. The most important and the largest number of cases of importance to

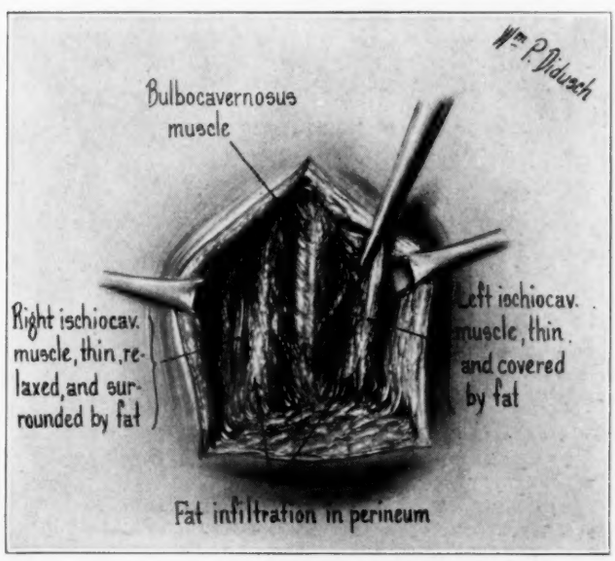
Wm. P. Didusch
Bulbocavernosus muscle
Right ischiocav. muscle, thin, relaxed, and surrounded by fat
Left ischiocav. muscle, thin, and covered by fat
Fat infiltration in perineum

Fig. 6.—Condition present in perineum of an old man. The muscles are very thin and there is definite fat infiltration present.

be eliminated are those patients who are impotent from some psychic cause. Such patients should be treated by a neurologist.

Frequently men who are advancing in years begin to lose their sexual power, and such cases should be considered carefully before the operation is attempted. It is most important for the surgeon to determine the blood pressure of such men, as it is entirely possible for cerebral hemorrhage to accompany the violent exercise involved in sexual expression, if the patient's blood pressure is elevated or his blood vessels are diseased.

It has been found that the muscles of men over 60 years of age are rarely suitable for the performance of this operation because of the fact that they are often infiltrated with fat and do not have the proper resilience.

It is particularly important not to attempt this operation on any person who has a disturbance of the nervous system such as is found in tabes dorsalis or in any form of syphilis. Men who are suffering from premature senility should be excluded from the benefits of this operation because of the possibility of their getting into social complications as a result of being able to express themselves sexually.

18. Wright, Samson: Applied Physiology, ed. 3, London, Oxford University Press, 1929, pp. 123-124.
19. Starling's Principles of Human Physiology, edited, revised by C. L. Evans; ed. 6, London, J. & A. Churchill, 1933, p. 989.

*Results of Operation in Thirty-Three Cases*

| Case | Patient | Age | Last Erection | Last Normal Intercourse | Cause | Condition of Muscles | Postoperative Complications | Postoperative Days | First Postoperative Erection | First Postoperative Intercourse | Subsequent Experiences |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | D. P. | 40 | 18 months | 2½ years | Perineal fistula; seminal vesiculectomy 2½ years | Good | None | 13 | 3 days | 13 days | Regular and good; 7 times first 3 days; 4 times weekly to date |
| 2 | J. R. | 31 | 3 years | 3 years | Blow in left groin and penis | Good | None | 9 | 5 days | 30 days | 3-4 times weekly; wife has recently given birth to a healthy baby girl |
| 3 | A. O. | 38 | 19 years | 19 years | Early excesses | Good | None | 9 | 3 days | 20 days | 2 times weekly |
| 4 | H. L. | 33 | 6 months | 1 year | Early excesses | Good | Slight drainage | 13 | 3 days | 17 days | Satisfactory intercourse to date |
| 5 | S. H. | 58 | 10 years | 10 years | Advancing years | Fatty infiltration | Pneumonia; phlebitis; drainage | 108 | 6 days | None, unmarried | Occasional erections |
| 6 | J. K. | 39 | 5 months | 6 months | Strain of muscles | Fair | None | 6 | 2 days | 24 days | Regular and satisfactory to date |
| 7 | P. K. | 57 | 3 years | 9 years | Perineal abscess nine years before | Moderate fatty infiltration | None | 9 | 7 days | 16 days | Fair |
| 8 | C. M. | 42 | 5 years | 5 years | Early excesses | Fair | None | 7 | 3 days | 21 days | Erections good; loses interest because of wife's delay |
| 9 | A. W. | 42 | 3 years | 3 years | Advancing years | Fair | Slight drainage | 8 | 7 days | 11 days | Many erections; premature; satisfactory of late; married recently |
| 10 | W. H. | 63 | 20 years | 20 years | Syphilis | Poor | Drainage | 19 | None | Unable to follow up | |
| 11 | H. H. | 29 | 6 years | 6 years | Weak musculature | Good | None | 11 | 4 days | Unable to follow up | Satisfactory erections; single |
| 12 | J. D. | 66 | 12 years | 12 years | Old age | Fair | None | 13 | None | Unable to follow up | |
| 13 | L. S. | 22 | Present (semi) | 2 years | Masturbation and sexual excess | Good | Inability to void; drainage | 7 | 2 days | 12 days | Many erections; entirely satisfactory intercourse; frequently |
| 14 | W. B. | 65 | 4 years | 4 years | Old age | Good for age | None | 19 | None | None | Not able to hold intercourse |
| 15 | M. M. | 65 | 2 years | 7 years | Prostatectomy 2 years; syphilis | Fair | None | 9 | None | None | |
| 16 | S. H. | 28 | Present (semi) | Never normal | Improper musculature | Good | Epididymitis; unable to void | 21 | 7 days | ..... | Occasional intercourse |
| 17 | S. H. | 50 | Present (semi) | Never normal | Advancing years | Fair | None | 8 | 21 days | Right after plication | Satisfactory intercourse; recently married |
| 18 | J. C. | 35 | Present (semi) | 4 years | Fall astride a picket fence at 6 years of age | Good | None | 10 | 8 days | Right after plication | Plication of suspensory ligament done 5/1/36; regular intercourse |
| 19 | P. B. | 34 | Present (semi) | 5 years | Early excesses | Good | Slight drainage | 11 | 4 days | 12 days | Good |
| 20 | J. B. | 25 | Present (semi) | 5 years | Fracture of pelvis and rupture of bladder 5 years ago | Good | None | 7 | 2 days | 10 days | Many erections; entirely satisfactory intercourse frequently |
| 21 | I. R. | 50 | Present (semi) | 20 years | Advancing age | Fair | Drainage; could not void | 19 | 20 days | 22 days | Good |
| 22 | D. O. | 50 | 1 year | 1 year | Advancing age | Poor | Could not void | 16 | 8 days | Satisfatory erections | Plication of suspensory ligament 4/20/36 |
| 23 | H. F. | 25 | Never complete | Never | Poliomyelitis at age of 15 | Good | Could not void | 19 | 9 days | None; engaged to be married | Frequent erections |
| 24 | P. B. | 44 | 3 years | 6 years | Early excesses | Good | Could not void | 12 | 4 days | No intercourse | Good erections; plication of suspensory ligament done |
| 25 | S. M. | 53 | 6 months | 6 months | Advancing years | Good | None | 14 | 10 days | Many erections | Plication of suspensory ligament done |
| 26 | M. C. | 33 | Present (semi) | 2 years | Early excesses | Good | Could not void | 11 | 6 days | No intercourse | Good erections; plication of suspensory ligament done |
| 27 | P. N. | 47 | 1 year | 2 years | Advancing years | Good | Could not void | 22 | 2 days | 40 days | Strong erections; normal intercourse |
| 28 | K. M. | 38 | Present (semi) | 10 years | Poor musculature | Muscles infiltrated with fat | Could not void | 15 | 12 days | Some erections | Plication of suspensory ligament done; good erections |
| 29 | N. S. | 54 | Present (semi) | 12 years | Advancing age | Fair | Could not void | 15 | 4 days | Many erections | Plication of suspensory ligament done; good erections |
| 30 | W. S. | 51 | 1 year | 5 years | Advancing age | Good | None | 8 | 2 days | Frequent strong erections | Plication of suspensory ligament done; result perfect |
| 31 | A. L. | 45 | Present | 16 years | Poor musculature | Poor | Could not void | 14 | None in hospital | 34 days | Plication of suspensory ligament done; 5 times in 2 weeks |
| 32 | C. C. | 48 | 10 years | 10 years | Advancing age | Very good | Could not void | 11 | None in hospital | Occasional erections | Plication of suspensory ligament done |
| 33 | R. C. | 46 | 1½ years | 1½ years | Poor musculature | Ischiocavernosus good, bulbocavernosus poor | Could not void | 9 | None in hospital | Some erections | Plication of suspensory ligament done |

NOTE.—Since this report was submitted, operations have been performed in eighteen additional cases. Some of these are too recent to report but for the most part the operations have been entirely satisfactory. The results are included in the summary but not in this table.

SUMMARY AND CONCLUSIONS

1. Animal experiments indicate that ribbon gut is the best material for use in shortening the ischiocavernosus and bulbocavernosus muscles, as they do not cut through or cause necrosis, while the ordinary catgut does so.

2. Up to the time of publication, fifty-one men have been operated on by the method described in this communication; namely, by shortening the ischiocavernosus muscle on each side and plicating the bulbocavernosus muscle.

3. In order to accomplish the desired result, the operation must be skilfully performed, with just the right amount of shortening of the muscles. If the muscles are too tight, a constant painful erection will result; if not tight enough, satisfactory erections will not be produced.

4. The tightening of the two leaves of the suspensory ligament causes compression of the dorsal veins of the organ, thus aiding stasis and preventing collateral circulation developing to such an extent that it detracts from the success of the operation.

5. The success of the operation apparently depends on the use of ribbon gut, which does not tear through the delicate muscles as does ordinary twisted catgut.

6. Thirty-one of the fifty-one patients have been successfully relieved of their impotence. Of the eight unsuccessful cases, four were men over 63 years of age. Patient 10, aged 63, had had syphilis for twenty years, and a favorable result was neither expected nor obtained. Patient 12, aged 66, had been impotent for twelve years and was unimproved by the operation. Patient 8, C. M., was perfectly cured by the operation and was efficient for a period of about six weeks. Then he began to slump and has remained only partially efficient since. It is probable that the plication of the bulbocavernosus was not satisfactory, and we are planning to reoperate on this patient in an attempt to relieve the situation. Patient 14, aged 65, had been impotent for four years. No improvement resulted from the operation, although it was expected. Patient 15, aged 65, had a prostatectomy two years before and his last intercourse five years previous to that. He was unimproved by the operation. Three other cases failed for no apparent reason and eight are too recent to report.

7. It will therefore be seen that the aged men who have not profited by the operation have been those over 63 years of age; these have not been helped in any instance thus far. This may be a blessing in disguise, as the possibility of cerebral hemorrhage is not inconsiderable if men of this age are subjected to the increase in blood pressure coincident with the excessive exercise connected with sexual intercourse.

8. The most spectacular cures have been achieved in those rendered impotent by traumatic injuries to the perineum due to operation, rupture of the urethra by straddle injuries or other violence.

9. It is well to emphasize those cases in which this operation should not be attempted. These include patients with psychic impotence, persons who have had the nervous chain broken such as in cases of old syphilis, and patients of advanced age with high blood pressure.

10. There is nothing thus far to indicate that the relief will be other than permanent, although sufficient time has not elapsed for absolute certainty on this point.

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# TUBERCULOSIS OF THE SPINE AND SCOLIOSIS

## AN IMPROVED TECHNIC FOR ARTHRODESIS OF THE VERTEBRAL JOINTS

CHARLES S. YOUNG, M.D.
LOS ANGELES

There are several well known operative procedures that have been used for the purpose of creating ankylosis of the vertebral joints, but none have been entirely satisfactory. Such operations should result in the production of a solid bony mass about and enmeshing the posterior part of the neural arches and spinous processes of several adjoining vertebrae.

It is a well established fact that an arthrodesis results in healing and fusion of the vertebral bodies in most cases of spinal tuberculosis. Arthrodesis has also been performed for many years in scoliosis to stabilize a section of the spinal column after the greatest possible correction of severe lateral curvature. The problem has been to devise an operation that would have the following qualifications: first, application to all regions of the vertebral column; second, reasonable certainty of arthrodesis without the development of pseudarthroses; third, minimum surgical shock, especially when the patients are young children.

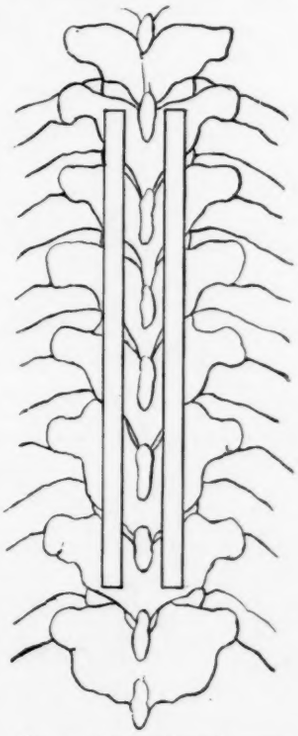

Fig. 1.—Osteoperiosteal transplants on bases of spinous processes and laminae, the periosteal surfaces of the grafts being directed posterolaterally.

The most widely known operative technics used to produce ankylosis of the spine are those described by Hibbs and Albee.

The Hibbs[1] operation is known as an intra-articular arthrodesis because the lateral articulations are invaded. In this procedure the spinous processes, the laminae and the articular processes are exposed subperiosteally. The cartilage is removed from the lateral articulations with a curet. Small sections of bone are raised from each lamina with a gouge and mallet and used to span the space between the laminae. The spinous processes are cut and fractured with specially designed cutting forceps so that they will lie in contact each with the one inferior. The periosteum and muscles are sutured in place to cover the exposed bone. This operation has many advantages. However, it has three disadvantages which one must consider: First, the use of the gouge and mallet to raise bone from the laminae causes trauma to the spinal cord and central nervous system through the impulse transmitted hydrostatically by the spinal fluid. This is manifested by a sudden increase in the pulse rate, which continues during the remaining time of the operation. Second, in the operation for scoliosis with severe rotation it is not techni-

1. Hibbs, R. A.: An Operation for Pott's Disease of the Spine, J. A. M. A. **59**: 433-436 (Aug. 10) 1912.

cally possible to remove the cartilage from the articular processes on the deep side. Therefore the operation cannot be performed completely as designed. In these cases fusion may not be complete and relapse in the deformity can result. Third, vertebral bone does not proliferate to the same extent as the bone tissue of the long bones. It is possible for a pseudarthrosis to develop in the region of operation for this reason, although the lack of continuity of bone chips is another cause of pseudarthrosis.

Fig. 2 (case 1).—Preoperative lateral view, which reveals destructive disease in second and third lumbar vertebrae.

The Albee[2] operation is known as the extra-articular arthrodesis because the lateral articulations are not invaded. In this procedure a tibial graft is inlaid in the spinous processes to bridge the vertebrae. This operation is not so practical for children because of the relatively small bone structure in the spinous processes. In adolescents and adults the Albee operation is used to its best advantage in lumbar tuberculosis with small or no kyphosis. Lumbosacral, thoracic and cervical disease makes the full thickness tibial graft present serious technical and mechanical difficulties when one attempts to implant it in the spinous processes for the following reasons: First, the sacral spinous processes are too rudimentary to be bisected and form a broad raw bone surface for fusion with a graft. Second, the thoracic spinous processes when bisected present very narrow and thin surfaces for the reception of transplanted bone. Third, the cervical spinous processes are so small after bisection that the insertion of a tibial graft in them is not practicable. In the consideration of the Albee operation one must take into account the fact that the impulse of the broad chisel used to divide the spinous processes causes hydrostatic trauma to the central nervous system through the spinal fluid. The hammering of the full thickness tibial graft into the angle formed by bisection of the spinous processes, as practiced by some surgeons, produces more hydrostatic impulses in the spinal fluid, which are manifested by a rapid increase in the pulse rate, the latter being of considerable concern to the anesthetist.

During the past seven years I have been performing an arthrodesing spinal operation which seems to have measured up to the requirements that have been presented.

### TECHNIC FOR TUBERCULOUS DISEASE

In tuberculous disease of the vertebrae, the operation is indicated when the diagnosis is made if the condition of the patient is sufficiently good to withstand any major surgical procedure.

The patient lies in the semiprone position with a sand bag under one shoulder and under the corresponding side of the pelvis and hip. The incision when no kyphosis is present may be longitudinal over the tips of the spinous processes. When there is a kyphosis the incision should be crescentic, beginning at the midline superiorly and curving laterally to return to the midline inferiorly. Towels are applied to the skin edges with large skin clips. The skin and superficial fascia are reflected until the supraspinous ligaments are exposed. The latter are divided in their midline longitudinally to expose the tips of the spinous processes, which are denuded. The interspinous ligaments are also divided longitudinally and are reflected laterally with the muscles, which are separated subperiosteally from the spinous processes and laminae. If the line of cleavage is kept within the ligaments and between the periosteum and bone, there is little hemorrhage. This subperiosteal dissection is continued laterally to the capsules of the lateral articulations. The separation of all soft tissue from the spinous processes and the posterior surface of the laminae is imperative. It is difficult in the exposure to divide the interspinous ligaments and reflect them completely, but every particle of these ligaments remaining on the spinous processes should be excised or curetted away. The operation should extend at least two vertebrae above and two below the diseased area.

In the thoracic region, if there is a prominent kyphosis, the tips of the spinous processes making up the angulation should be excised to decrease the visible deformity.

For the excision of osteoperiosteal grafts, a straight longitudinal incision is made over the middle of the medial surface of the tibia after the application of a tourniquet. A curved incision may result in the division of the large saphenous vein unnecessarily. The superficial fascia is reflected, the shaft of the bone is exposed and the periosteum is incised by two parallel incisions outlining the medial surface of the bone for

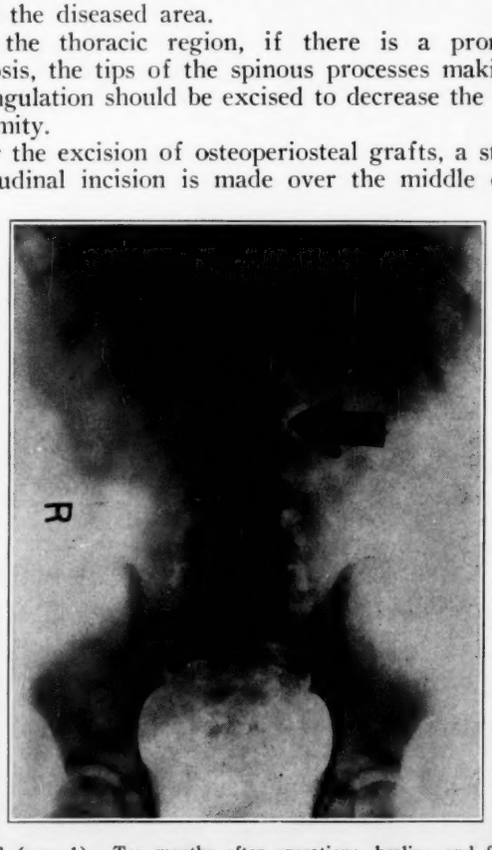


Fig. 3 (case 1).—Ten months after operation: healing and fusion of second and third lumbar vertebrae.

2. Albee, F. H.: Transplantation of a Portion of the Tibia into the Spine for Pott's Disease, J. A. M. A. **57**: 885-886 (Sept. 9) 1911.

the required length of the graft, which should be sufficiently long to extend the length of the exposed area on the vertebral column. The periosteum is divided further by another parallel incision midway between the other periosteal incisions. The outlined periosteum with a layer of cortical bone about 2 mm. in thickness is raised with a thin chisel or osteotome so that it can be removed in two linear sections, each

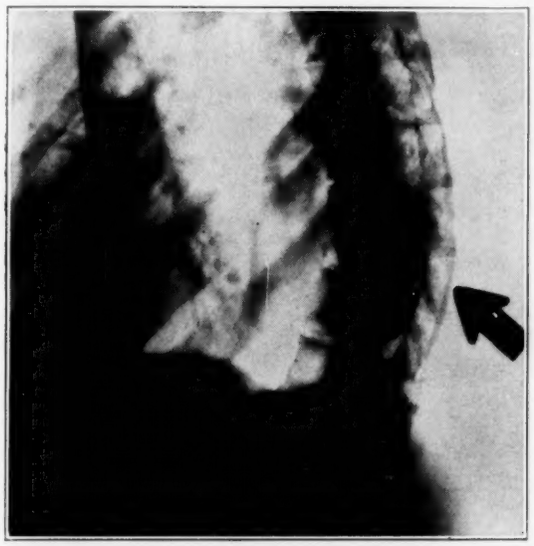

Fig. 4 (case 2).—Fifteen months after operation, showing healing and fusion of diseased vertebral bodies. Attention is called to proliferation of bone in region of spinous processes.

being half the width of the medial surface of the shaft at its narrowest part. The grafts should be bent between the folds of a towel moistened with physiologic solution of sodium chloride so that their cortical or raw surface will conform to the contour of the exposed vertebrae. After bending, each graft should be fitted (one on the right and the other on the left) so that its raw surface is in perfect contact with each lamina and base of spinous process (fig. 1). The periosteal surface of the grafts should be superficial.

The spinal periosteum, interspinous ligaments and muscles are sutured over these grafts to maintain them in position, deep interrupted sutures across each space between the spinous processes being used. For this purpose No. 3 chromic catgut is used in adolescents and adults, while No. 2 chromic catgut is used in children. A running suture of No. 1 chromic catgut in adults and No. 0 chromic catgut in children is used to unite the supraspinous ligaments and deep fascia.

In the lumbar and cervical regions, when there is a thick layer of subcutaneous fat, it is necessary to suture it with plain catgut. Closing of the skin and superficial fascia is made with vertical mattress sutures and running sutures of nonabsorbable material. Time can be saved in this operation by having the osteoperiosteal grafts excised from the tibia by an assistant, while the knee is held flexed 90 degrees.

Postoperative immobilization of the vertebrae is maintained by means of plaster-of-paris shells or body jackets. In cases of young children, plaster shells made and dried before the operation are used. The patient is strapped into either the anterior or the posterior shell to allow a change in position. For older children, adolescents and adults, Bradford frames are used until the stitches are removed. Then a plaster jacket is applied with the patient on a canvas sling in the prone position. In lumbar disease the jacket should be extended to include the thighs. When there is a severe kyphosis a Bradford frame is unsuitable, so that immediately postoperative a firm bed with hard pillows is used until the stitches are removed, when a well padded plaster jacket can be applied.

Recumbency should be maintained for a period of from three to six months, the time being determined by the degree of healing revealed by roentgenograms. A back brace is applied following the plaster jacket and is worn for from six to nine months, this time also being determined by the healing shown in roentgenograms. During the entire period of convalescence the patients are required to include in their diet or take medicinally a sufficient quantity of calcium, phosphorus and vitamin D in order that there may be no deficiency of bone-forming essentials.

### SCOLIOSIS

I have performed this vertebral arthrodesis on a few scoliosis patients. The proliferation of bone that followed the operation, and the stability of the fused section of the spinal column, were very gratifying. The operative technic was the same as for tuberculosis of the vertebrae. However, in two cases of extreme rotation of the vertebrae in the lumbar region it was possible to use only one wide graft. The latter was placed on the laminae and bases of the spinous processes of the superficial side. In these severe rotation cases a partial exposure of the spinous processes on the deep side was necessary in order to facilitate the longitudinal division of the interspinous ligaments.

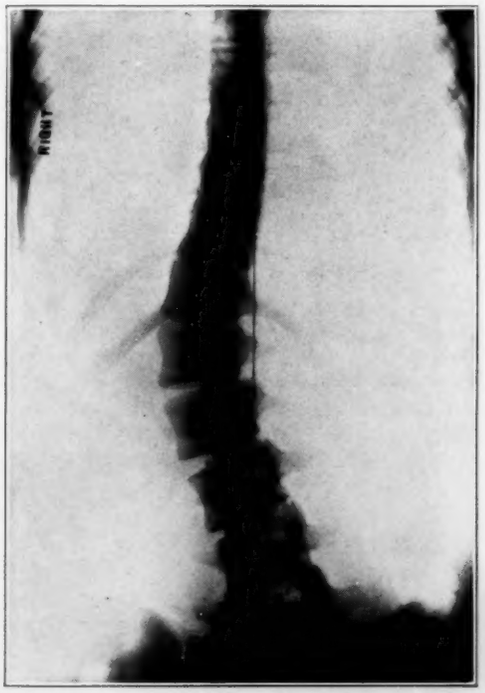


Fig. 5 (case 3).—Right thoracolumbar structural scoliosis.

Postoperative immobilization of the scoliosis patients was maintained by head and pelvic traction and by plaster turnbuckle jackets for periods varying from four to six months. Supporting apparatus consisting of back braces and corset braces was used for the following six to eight months.

## COMMENT

The extensive proliferation of bone, to produce ankylosis of a section of the vertebral column following osteoperiosteal transplantation as described, is dependent on Wolff's law. The latter is illustrated particularly in one case of scoliosis with extreme rotation, in which newly formed bone stands out in relief in the roentgenogram. The shadow appears in total density to be greater than all the other contiguous bone structures in the vertebral column (fig. 7).

It is reasonable to believe that this arthrodesis is dependent largely on a very thorough subligamentous and subperiosteal exposure of the posterior part of the neural arches and careful fitting of the osteoperiosteal grafts, so that the raw surfaces of the latter are in broad contact with the raw surfaces of the laminae and bases of the spinous processes. A combination of this operation with bone chips from the laminae and imbri-

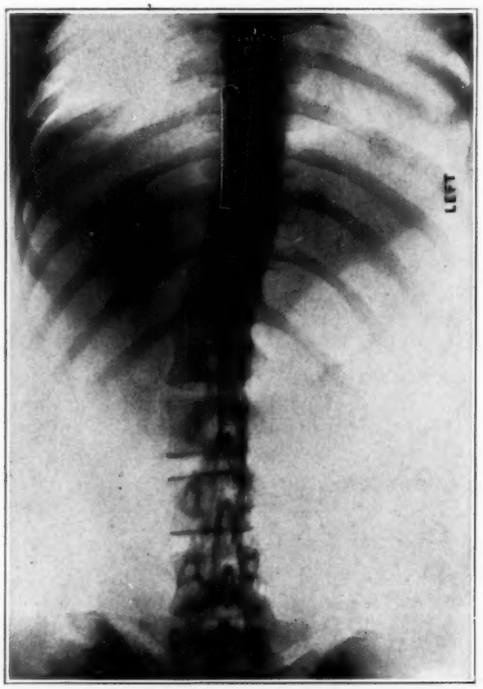


Fig. 6 (case 3).—Five and one-half months after operation.

cation of the spinous processes will lead to fusion in most cases, but it makes the operation unnecessarily complex and the rationale is changed.

With regard to instruments used, I found that the conventional periosteal elevators in general use were unsatisfactory for subligamentous and subperiosteal exposure of the vertebrae. The handles were concave or too small, so that the hand and forearm muscles of the surgeon became cramped in the tedious dissection. An elevator with a large convex handle and a sharp elevator edge for adults and a dull rounded edge for children was designed to obviate this difficulty.

## STATISTICS

Feb. 1, 1936, there were seven cases of tuberculosis of the vertebrae in which more than one year had elapsed since operation. Of this group the first operation was performed Sept. 16, 1930, and the last Jan. 3, 1935, so that sufficient time has elapsed to make a fair estimation of results. The youngest patient was 2 years and the oldest 47 years of age. Originally it was considered that the osteoperiosteal grafts would be pliable for accurate fitting in children and adolescents only. However, in the two adults, thin grafts were removed from the tibia with little splintering, so that they could be bent to approximate the curve required. All the tuberculosis patients had an uneventful convalescence. Healing has resulted in the effected vertebral bodies, and ankylosis has occurred in the section of the vertebral column on which the operation was performed. One patient, a girl of 5 years, with extensive destruction of the bodies of five thoracic vertebrae, a tuberculous abscess and a severe kyphosis, has an arthrodesis extending from the fifth thoracic to the first lumbar vertebrae. Subsequent to the operation, Aug. 22, 1931, there was progressive fusion of the remaining portions of the diseased vertebral bodies and a proliferation of bone from the transplants as revealed by roentgenograms. The patient became clinically well excepting for the deformity and hyperactive knee jerks, which were present prior to the arthrodesis. As there were no symptoms the mother of the child did not consider it necessary to bring the latter in for observation for a period of more than fifteen months. The parents noticed that there was a rapid increase in the deformity a few weeks prior to readmittance. Roentgenograms revealed a new destructive lesion in the fourth thoracic vertebra, which was superior to the preceding disease in the lower thoracic vertebrae. A second operation was performed May 22, 1936. The site of the first operation was exposed in its superior part and a large mass of dense bone was found to enmesh and fuse with the spinous processes and laminae. The operation was extended superiorly to include three more vertebrae. Osteoperiosteal transplants were placed on the bases of the spinous processes and laminae. Inferiorly the grafts were inserted under the reflected periosteum of the bone mass which resulted from the first operation.

Feb. 1, 1936, there were six cases of scoliosis in which operation had been performed more than three years before. These patients were adolescents. There was one case of rachitic scoliosis, two of developmental structural scoliosis, and three cases caused by anterior poliomyelitis. This group of patients had no postoperative complications, and fusion resulted so that there is good stability of the vertebral column in each case.

## REPORT OF CASES

Only four case reports are given, because this number will serve to illustrate the types of patients on whom the operation has been performed.

CASE 1 (figs. 2 and 3).—A. T., a Japanese boy, aged 6 years, admitted Dec. 27, 1927, had a kyphosis with the apex of the angulation at the spinous process of the second lumbar vertebra. The thorax leaned toward the left, so that the patient had difficulty in maintaining his equilibrium when walking. The sacrospinalis muscles in the thoracic and lumbar regions were in a state of spasm. There was a limitation of movement in the dorsolumbar region of the vertebral column. The Pirquet reaction was positive.

Roentgenograms showed a destructive process in the bodies of the second and third lumbar vertebrae and a narrowing of the intervertebral space. In the anteroposterior view the second lumbar vertebra was tilted downward on the left and the destructive process appeared more advanced in it and the cartilage inferior to it.

The diagnosis was tuberculosis of second and third lumbar vertebrae.

Recumbency on plaster shells was instituted primarily, because the mother of the patient refused consent for an arthrodesis. Fusion of the vertebral bodies did not occur after nearly three years, although the disease did not make any definite progress during this time.

Sept. 16, 1930, an arthrodesis was performed by implantation of a tibial osteoperiosteal graft on each side of the bases of the

spinous processes and laminae from the twelfth thoracic to the fifth lumbar vertebrae. Sept. 24, 1931, one year later, the patient from a clinical standpoint had made a complete recovery with the exception of the loss of spinal movement between the fused vertebrae. The kyphosis deformity had not increased and the lateral deviation of the thorax had been overcome. The boy went to Japan in 1932 to receive his education there. In a communication from the family physician May 12, 1936, the latter reported that there has been no relapse and that the patient is clinically well.

CASE 2 (fig. 4).—G. C., a man, aged 41, admitted Dec. 19, 1934, had a kyphosis with the apex of the angulation at the spinous process of the eleventh thoracic vertebra. The sacrospinalis muscles in the thoracic and lumbar regions were in a state of spasm. Movement in the dorsolumbar region of the vertebral column was very restricted in its range. Roentgenograms showed a destructive process with wedging of the eleventh thoracic vertebral body with an almost complete loss of the intervertebral spaces between the tenth and eleventh and the eleventh and twelfth thoracic vertebrae. There was an

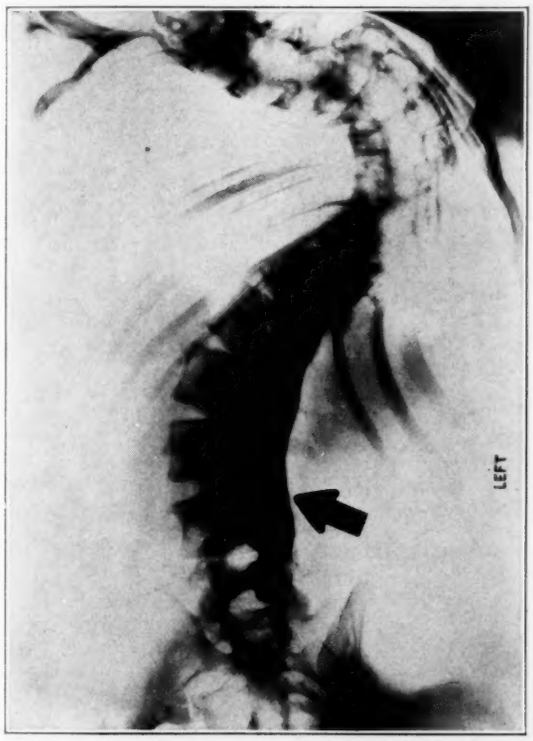


Fig. 7 (case 4).—Six years after osteoperiosteal transplantation in thoracolumbar region. Attention is called to dense mass of proliferated bone. Relapse in curvature of thoracic region where first operation was performed.

invasion of the destructive process into the bodies of the tenth and twelfth thoracic bodies. A shadow indicating considerable perivertebral thickening was present in the anteroposterior view.

The diagnosis was tuberculosis of the tenth, eleventh and twelfth thoracic vertebrae.

Jan. 3, 1935, an arthrodesis was done by implantation of an osteoperiosteal graft on the bases of the spinous processes and laminae from the seventh thoracic to the third lumbar vertebrae. Jan. 3, 1936, the section of the vertebral column at the site of the operation was ankylosed. There was no spasm of the sacrospinalis muscles. The patient was clinically well and had returned to his occupation.

CASE 3 (figs. 5 and 6).—D. S., aged 14 years, admitted July 26, 1932, had a right structural dorsolumbar scoliosis with extensive rotation. There was an angulation of the ribs posterior on the right side. The right scapula was elevated and abducted. Limitation of right lateral bending of the trunk was present. An anteroposterior roentgenogram showed a right thoracolumbar scoliosis.

The diagnosis was right thoracolumbar scoliosis.

July 26, 1932, an arthrodesis was done by implantation of tibial osteoperiosteal grafts on the bases of the spinous processes and laminae from the ninth thoracic to the third sacral segment. Sept. 16, 1933, the turnbuckle jacket was removed, ten months after the operation. The scoliosis was not apparent on physical examination, although the angulation of the ribs on the right side detracted from the appearance of the back and the improved alinement of the vertebrae.

CASE 4 (fig. 7).—A. G., a school boy, aged 14 years, admitted July 19, 1929, had a flaccid paralysis, partial or total, of the muscles of the back, the abdomen and the lower extremities. The back showed a severe left thoracic and a right thoracolumbar scoliosis. The scoliosis was so extreme that the costal margin impinged on the pelvis in the standing or sitting position. The thorax was badly deformed, with extreme angulation of the ribs on the left side. There was severe paralytic involvement of both lower extremities, the right being practically a dangle leg. Other surgeons had previously performed stabilizing operations on both feet and a fusion operation on the thoracic spine.

The diagnosis was anterior poliomyelitis; left thoracic, right thoracolumbar scoliosis.

July 24, 1929, an arthrodesis was performed by implantation of an osteoperiosteal tibial graft on the superficial side of the laminae and spinous processes from the twelfth thoracic to the fifth lumbar vertebrae inclusive. The operation was not preceded by corrective measures to diminish the thoracolumbar curve on account of the previously fused thoracic vertebrae, the extreme deformity of the thorax and the severe rotation of the lumbar vertebrae. It was believed that the separation of the spinal ligaments and postoperative head and pelvis traction, which was applied, would lead to all the practical correction of the scoliosis that was possible. The brace was removed April 22, 1930, approximately nine months after the operation. The stability of the spine was such that there was no pain or sense of weakness in the back. When the last inspection of this patient was made on March 19, 1936, he was employed. In the follow-up roentgenogram of Dec. 26, 1935 (fig. 7) the thoracic scoliosis at the site of the first arthrodesis showed a relapse, while in the thoracolumbar region there was revealed a dense mass of bone which obviously prevented any increase in the deformity.

## CONCLUSIONS

1. An arthrodesis of adjoining vertebrae can be performed by transplantation of long flexible osteoperiosteal grafts from the tibia to the laminae and bases of the spinous processes.

2. This operation has resulted in healing and fusion of vertebrae in which there was a tuberculous osteitis (Pott's disease).

3. After the greatest possible correction of the deformity in scoliosis, a section of the vertebral column can be stabilized by this operation to prevent relapse and to make the use of braces and supporting apparatus unnecessary.

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**Artificial Insemination.**—There has been, from time to time, a good deal of unfortunate newspaper discussion on the subject of artificial insemination and "test-tube babies." Many women have gotten the impression that the method is of frequent value in the treatment of sterility. This is not the case. In normal intercourse the sperm is deposited in the immediate vicinity of the mouth of the womb, and the spermatozoa quickly enter the uterus. At times, however, the secretions or discharges of the canal may make this difficult, so that it is conceivable that in the rare case the injection of the sperm into the uterine cavity with a syringe would give a better chance of pregnancy. In cases of male sterility—and these furnish the chief excuse for artificial insemination—there is no doubt that the method is of at least some value, for without it the chances of the woman are nil unless she sacrifices her marriage vows. If a woman thinks, however, that a single test-tube insemination is sure to result in conception, she will practically always be sadly fooled.—Novak, Emil: The Woman Asks the Doctor, Baltimore, Williams and Wilkins Company, 1935.

# GENERAL ACQUIRED ANHIDROSIS

## REPORT OF A CASE AND INVESTIGATIONS OF THE HEAT REGULATION AND CIRCULATION

MOGENS FOG, M.D.
COPENHAGEN

A total disappearance of the ability to perspire is rarely seen. The sporadic and familial cases of general anhidrosis that have been reported in the past (Quilford,[1] Loewy and Wechselmann, Richardson,[2] Tannhauser[3] and others) resulted from a congenital and general developmental anomaly of the dermic organ; i. e., an ectodermal dysplasia.

Nowhere in the medical literature, however, have I been able to find a description of a case such as the one cited here; i. e., in which cessation of the function of sweating occurred in a person who had previously been perfectly normal in this respect. A case of this sort gives rise not only to diagnostic observations and examinations but also to a number of pathophysiologic ones, which, among other things, serve to throw light on the normal function of perspiration.

Fig. 1.—Biopsy. Skin from the axillary region. Apocrine glands with low cubical epithelial cells. Stained by hematoxylin-eosin.

### REPORT OF CASE

*History.*—A man, aged 25, a patient in the Rigs Hospital, department B, from July 26 to Nov. 9, 1933, was the fifth of six siblings. The family was well, with no history of sweat disturbances, ectodermal dysplasia or metabolic or nervous diseases.

The patient had had pneumonia in infancy and later the common diseases of childhood. At 17 he was treated for coxa vara traumatica sinistra with osteotomia subtrochanterica. There have been no symptoms from the extremities since.

At 21, in 1927, the patient contracted an acute febrile disease thought to be common influenza with blepharitis. After spending twelve days in the hospital he resumed work, although he did not feel well. Several times during the next two months his temperature rose, reaching 39 C. (102 F.) in the evening. At the beginning of April he was compelled to go to bed with a temperature of 41 C. (105.8 F.). He was extremely ill and during the course of the next few days he developed edema of the pharynx, face and hands, and a red spotted exanthem appeared over the entire body. The latter soon disappeared. For a fortnight he had a high fever and was drowsy, although he did not display typical somnolence, diplopia, cervical rigidity or severe headache. Figure 4 shows the temperature curve of this period and the subsequent months. Following a severe nasal hemorrhage the patient improved, but nevertheless he remained in bed for many weeks. There were occasional recurrences of slight temperature elevation. There were no abscesses or exanthema but the patient's skin peeled off and all his hair fell out.

In June he again had fever accompanied by diarrhea. Widal's reaction on the serum, which had previously been negative, was now positive, thus determining the presence of paratyphoid fever. The urine and feces, however, reacted negatively.

Fig. 2.—Preparation as in figure 3. Cystic degeneration of apocrine glands. Below, normal eccrine glands.

During the course of the summer the patient's general condition improved and in August he returned to his post as clerk in a grocery shop.

In September he attended a football match in the blazing sun and suddenly become indisposed. He had a sensation of pressure above the precordia, and his face, which was greatly congested, felt burning hot. For the first time he noticed that he was not perspiring anywhere on his body.

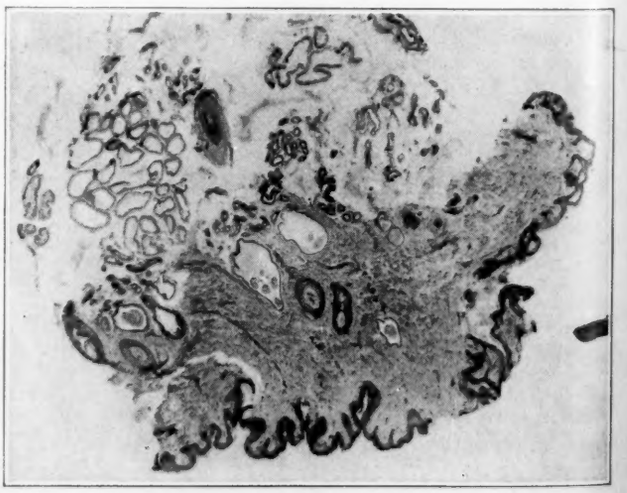

Fig. 3.—Preparation as in figure 3. General view showing apocrine glands in varying degrees of degeneration. Normal eccrine glands.

Since then the patient has never sweated. He maintains that previously, when it was warm or when he was working, he perspired quite normally, at times even excessively. This also applies to his long febrile illness.

His condition since September 1927 proved to be very troublesome and he not only had to alter his way of living considerably but also felt himself in danger of having to give up his work.

His chief complaint was of attacks similar to that suffered when he first discovered the nature of his illness. When he walks rapidly, especially in the sun, or engages in manual labor, he becomes indisposed. Particularly his face, but also the rest of his body, feels overheated; he has dull pain in the

Read before the Danish Neurologic Association in September 1933.
Translated from the Danish by Elsie-Marie Werner Kornerup, A.B.
From the Rigs Hospital, Department B (physician in chief, Prof. Erik Warburg, M.D.).

1. Quilford, S. H.: Wien. med. Wchnschr. **33**: 1116, 1883.
2. Richardson, H. B.: J. Biol. Chem. **37**: 397 (Feb.) 1926.
3. Tannhauser, S. J.: Hereditary Ectodermal Dysplasia of the "Anhydrotic Type," J. A. M. A. **106**: 908 (March 14) 1936.

precordia, palpitation, dyspnea and often painful paresthesias in the face and the peripheral parts of the extremities. Frequently the attacks do not come on until he has stopped working or has come to a cool place. The symptoms, including the dyspnea, may then last for as long as an hour. He is quite exhausted after these attacks and is unable to resume work. During a short febrile illness in 1932 he felt much worse when his temperature was between 38 and 39 C. (100.4 and 102 F.) than previously when he had suffered identical temperature elevations. He noticed that the discomforts which he experienced usually made themselves manifest just after meals and during periods when he ate heavy and extremely "nourishing" food.

Besides the permanent absence of sweat secretion, the patient complains that his skin has become dry and scaly. This is especially true of his face, and he has to use cold cream two or three times a day.

He has always been inclined to become fat, but during his illness in 1927 he lost considerable weight. Since then, however, he has again gained 11 Kg. (24⅕ pounds).

The hair on his head, which fell out during the febrile period, has largely grown in again.

Except for some months in 1929, when he suffered from insomnia that did not respond to ordinary hypnotics, he has always been normal with regard to sleep.

Evacuation, urination and digestion show no abnormalities. Likewise his lacrimal and salivary secretion is normal. During the attacks, however, there is often a profuse thin secretion from the nose. Sexual desire and sexual life, as well as his mental state, are said to be normal.

As previously mentioned, since the onset of the anhidrosis the patient has had to make a number of adjustments in his way of living. He usually keeps quiet, walking slowly and preferably not at all on warm days, when a quarter of an hour's walk is enough to call forth the discomforts described. He does not do much bicycling; he no longer dances, and he is unable to do his full share of work. In the beginning of the summer of 1933 he felt quite incapable of working and was therefore admitted to the hospital.

*Clinical Examination.*—Psychiatric: Mentally the patient is intelligent. He possesses excellent understanding of his condition and has the ability to observe it. He has emotional stability.

Somatic: The patient is well proportioned with no symptoms of endocrinologic abnormalities. His weight is above average, 74.4 Kg. (163.6 pounds) and his height 164 cm. (5 feet 5 inches). The layer of subcutaneous fat tissue is particularly thick on the thorax and mammae; the extremities are normal, yet the wrists, hands and feet are exceptionally small, in fact, almost feminine (fig. 5).

The thyroid gland is normal. The rectal temperature is normal.

The hair on the head is thin as in seborrhea; the axillary and pubic hair is normal. Especially on the face and extremities the skin is very dry and scaly but without myxedematous changes.

Encircling the abdomen and lumbar region is seen a segmental, clearly defined stripe of brown pigmentation. This is presumably congenital. (A sister is said to have the same anomaly.)

Clinical, roentgenologic and electrocardiographic examinations of the heart showed nothing abnormal. The lungs are likewise normal.

X-ray examination of the pituitary region is negative.

*Neurologic Examination.*—Pupillary reaction, optic movements and other functions of the cranial nerves are normal. Tone, strength, coordination, superficial and deep sensibility, as well as reflexes, are normal in the extremities; the Babinski phenomenon is absent; the gait is free; there is no tremor, oligomimicry or bradykinesia.

The naso-ocular reflex (Wernöe), pilomotor reflex and spontaneous vasomotor reactions (flushing and blanching) are normal; there is lively dermographism with urticarial reaction.

*Laboratory Examinations.*—There were no pathologic elements in the urine; diuresis was increased, averaging 2,000 cc. (measured for forty-two days, minimum 1,400 cc., maximum 2,600 cc.); the concentration was correspondingly low. Hemoglobin was 88 per cent, the sedimentation rate 5 mm. an hour. The Wassermann reaction was negative; blood pressure 130 systolic, 90 diastolic. The basal metabolism was from 98 to 92 per cent (Benedict). The spinal fluid was bloody, with a normal protein content and a negative Wassermann reaction. Ewald's test meal: quantity 113 cc., congo 42, phenolphthalein 50.

*Summary.*—A man, aged 27, had at the age of 21 a long febrile disease (paratyphoid fever). Since then he has not been able to perspire and under circumstances in which sweat secretion usually appears (heat, fever, work) he gets attacks of indisposition, precardial pain, palpitation, dyspnea and congestion. There is no objective sign of organic nervous disorder or metabolic disease. The patient's skin is dry and scaly but otherwise shows nothing abnormal. The heart is seen to be normal. Diuresis is increased.

It is not unusual to come across patients who maintain that they "cannot perspire." Closer investigation of these cases reveals, however, that the secretion is present although reduced.

Therefore the first task in a case such as I have described is to verify the patient's statement that he is incapable of perspiring under all circumstances. With this purpose in mind the following experiments were carried out:

*Artificially Produced Fever.*—A preparation of sulfur and olive oil was injected intramuscularly (first day, 0.5 cc.; second day, 1 cc.). The rectal temperature rose to a maximum of

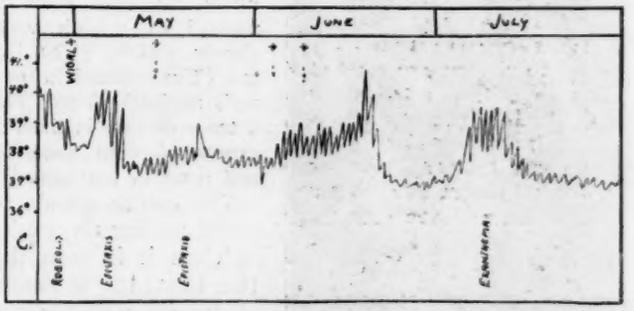


Fig. 4.—Temperature curve during illness of patient in 1927 and subsequent months.

38.1 C.; i. e., the same reaction as is seen in healthy persons. The skin temperature graded on the feet went up from an average of 32.9 C. (91.2 F.) to 34.2 C. (93.5 F.).

There was great congestion and the patient did not feel well. No sweat secretion was seen.

*Exposure to High Exterior Temperature.*—The patient's body and extremities were placed in a heating chest in which the initial temperature was 35 C. (95 F.), rising in the course of ten minutes to 50 C. (122 F.). From the very start he felt distressed; he became more and more congested and at the end of nineteen minutes the experiment had to be interrupted, as he was exceedingly ill with dyspnea, small, weak and rapid pulse, and râles on the posterior surfaces of both lungs. His skin was scarlet but without a drop of perspiration. He recovered very slowly. By mistake the patient's temperature was not taken. Clinically the condition had to be designated "cardiac insufficiency."

*Administration of Pilocarpine.*—One milligram of pilocarpine hydrochloride was injected intravenously. This caused a slight congestion of the face and subjective sensation of warmth but no sweat secretion. Thereupon 5 mg. of pilocarpine was injected, producing more pronounced vasomotor reaction and profuse salivation, but not a trace of secretion from the skin.

These investigations permitted me to conclude that the patient was right in saying that his sweat secretion had disappeared. Moreover, the experiment in the heating chest had given a good idea of the serious symptoms that were capable of developing in this patient. He maintains that he has been just as ill as in the heating chest twice since the onset of his illness, but that since

then he has avoided subjecting himself to conditions that might possibly bring on such a severe attack.

In view of the length of time the patient's illness has lasted (six years) it was deemed desirable to find out to what degree the sweat glands in his skin were present or had undergone regressive changes. The decided symptoms from the skin which were present during the patient's acute illness (exanthem, peeling and loss of hair) suggested the possibility of a primary disorder of the dermic glands themselves. Because of this a biopsy of the axillary skin was undertaken.

*Histologic Examination* (Dr. Sven Christiansen).—The epidermis and papillae were normally developed. Numerous lumens of sweat glands were seen in the corium (figs. 1, 2 and 3). About one half of these had the structure characteristic of normal apocrine glands; i. e., the cavity was covered with epithelial cells varying from low cubical to cylindric ones. The latter had tongue-shaped shoots of protoplasm projecting into the lumen, where, in addition, fragments of discarded protoplasm were to be found. The rest of the glands proved to be abnormal. They were nearly cystic hollows, covered with absolutely flat cells, only the nuclei of which were clearly visible. The iron test (Tirmann and Schmelzer's method) showed only a trace of iron in the first group of cells described and none in the second.

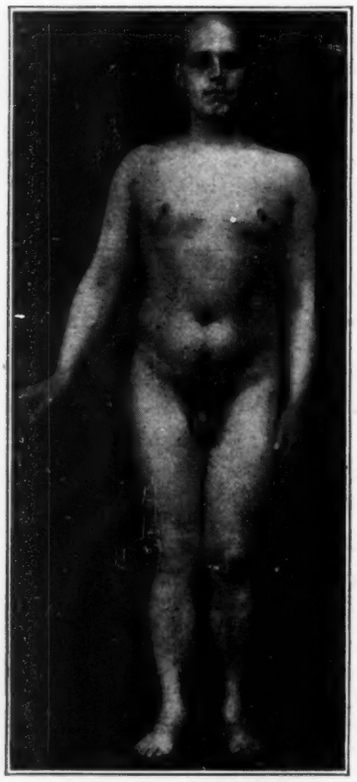

Fig 5.—Appearance of patient at time of examination.

The eccrine glands revealed nothing abnormal.

Thus it is seen that the histologic picture shows reduced function of the still existing glands and advanced degeneration of the rest. It is interesting to note in this connection that pilocarpine did not succeed in provoking secretion of the glands, in spite of the fact that about one half of these were found to be morphologically normal. This seems to confirm Müller's [4] statement that the effect of pilocarpine on perspiration disappears after the interruption of innervation.

At the same time the result of the histologic examination directs attention to a consideration of the localization of the disorder. As I mentioned at the beginning of this account, in the previously reported cases of general anhidrosis there were general developmental anomalies in the skin, one of which was a complete lack of normal sudoriferous glands.

In my patient it is found that the secretion of sweat ceased despite the fact that a large number of the glands are still present. It must be regarded as indisputable that the origin of his disease must be sought in the septic condition in which he found himself in 1927 and which doubtless affected the innervators of the sweat glands. The general nature of the disease indicates that the disorder is not to be sought in the peripheral neuron, the sympathetic nerves or the ganglions in the sympathetic trunk. Furthermore, the elective lesion of the glandular nerves, without the vasomotor nerves of the skin also suffering and likewise the partial degeneration of the glands themselves, argues against such localization.

In the central nervous system sweat innervation is represented by centers in the lateral horn of the medulla spinalis, in the medulla oblongata and in the cerebrum. The elective but nevertheless general extent of the disease does not speak in favor of spinal localization. On the contrary, attention is focused on those centers of sweat secretion which have been shown to be closely related to the heat regulation center in the tuber cinereum (Isenschmid,[5] Dieden,[6] and others). It is, however, peculiar that a cerebral disorder should cause a total and permanent cessation of the functioning of perspiration. In transverse lesions of the spinal cord in both man [7] and animals [8] the secretion was seen to return in from twenty-five to seventy-five days after the trauma. Only one case has been reported [9] in which a lesion such as this produced permanent cessation of sweat in the regions affected.

I realized that my assumption that the patient's pathologic condition was localized to the hypothalamic center would be confirmed if it were possible to show symptoms of a related disorder of other functions attributed to the activity of the hypothalamic cerebral regions.

In spite of widespread experimental and clinical experience there are, as yet, very few morbid phenomena to which, in this respect, one can ascribe local diagnostic worth. It cannot be said that my patient displays any such pronounced symptoms. His moderate adiposity might be explained by the sedentary life that he has been compelled to lead for a number of years. His diuresis is increased—it is about 2,000 Gm. of urine daily and the specific gravity is correspondingly low. This may possibly be interpreted as an indication of a lesion of the tuber cinereum, since the disappearance of the sweat secretion cannot be assumed to influence the diuresis during confinement to bed, consumption of ordinary fare and existence under everyday living conditions.

The cutaneous insensible perspiration, which constitutes about 30 per cent of the total water excretion of the organism, must be interpreted simply as a physical process of evaporation which is independent of the function of the sweat glands and therefore in this case scarcely compromised. The increase in the diuresis is, however, too slight to permit one to consider the presence of a manifest diabetes insipidus. Furthermore, observation of the patient thus far has given me no reason to believe that there was anything wrong with the heat regulation. His body temperature was normal and showed the usual daily rhythmic fluctuations. Following injection of a preparation of sulfur and olive oil, his temperature rose just as much as a normal person's does after the same dose. Yet, notwithstanding this, a closer investigation of the patient's heat regulation was considered desirable—not for local diagnostic reasons but for pathophysiologic ones. A case such as the foregoing serves to throw light on the significance

4. Müller, L. S.: Die Lebensnerven, Berlin, Julius Springer, 1930.

5. Isenschmid, R.: Handb. d. norm. u. path. Physiol. **17**, 1926.
6. Dieden, H.: Deutsches Arch. f. klin. Med. **117**: 180, 1915.
7. Head, H., and Riddoch, G.: Brain **40**: 188 (Nov.) 1917. Böwing, H.: Deutsche Ztschr. f. Nervenh. **76**: 91, 1923.
8. Richter, C. P., and Shaw, M. B.: Complete Transections of the Spinal Cord at Different Levels, Arch. Neurol. & Psychiat. **24**: 1107 (Dec.) 1930.
9. von Schwenkenbecher, A.: Handb. d. norm. u. path. Physiol. **4**, 1929.

of cutaneous secretion of water in maintaining normal bodily temperature during increased heat production in the organism.

Before I describe the other experiments to which the patient was subjected I shall call to mind the various factors pertaining to heat regulation.

Chemical heat regulation sets in particularly under circumstances in which the exterior temperature is

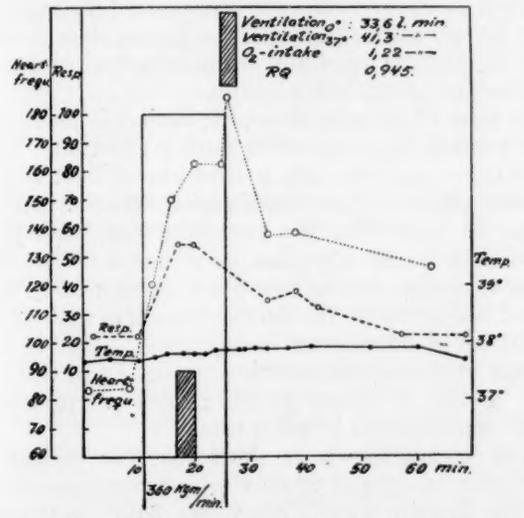


Fig. 6.—Experiment 1: Patient dressed, without ventilator.

reduced, i. e., when there is greater heat production in the body. This is accomplished by muscular contraction and more specific metabolic increase.

Physical heat regulation exercises its action through variations in the amount of heat given off by the body. This takes place in various ways: (*a*) through radiation from the surface of the skin, (*b*) through conduction and heat currents from the surface of the skin, (*c*) through evaporation from the lungs and skin, (*d*) through warming of ingested food and inspired air.

A nude person lying in a horizontal position gives off heat according to the following approximate figures: radiation, 70 per cent; conduction and currents, 5 per cent; evaporation through the lungs, 10 per cent; evaporation through the skin, 15 per cent. The other aforementioned factors (*d*) play an inconsiderable part.

Under normal conditions such as this perspiration does not, as I have said before, act as a link in heat regulation. On the other hand, it becomes a very considerable factor under two quite different conditions:

1. When the giving off of heat by means of radiation and conduction is hindered (in cases in which the exterior temperature approaches or exceeds the skin temperature).

2. During an increase of heat production in the organism; for example, during muscular activity when, at the same time, a peripheral dilatation of the dermic blood vessels causes constantly increasing radiation and conduction, and increased pulmonary ventilation results in greater excretion of water through the lungs.

In a definite experiment Rubner and Lewaschew[10] found that the amount of perspiration from a man placed in a room temperature of 28.9 C. (84 F.) corresponded to one half of the total loss of heat. During muscular activity the quantity of perspiration may reach 3 or 4 liters a day (approximately 3⅕ or 4⅕ quarts), corresponding to from 1,600 to 2,150 calories.

10. Rubner and Lewaschew, cited by Müller.[4]

In the experiment already described, namely, when the patient was placed in a heating chest, the temperature of which prevented heat being given off by means of conduction and radiation, dangerous symptoms of cardiac insufficiency appeared. Contrary to this, a normal person who is subjected to similar conditions can make up for the lack of radiation by increased evaporation. In the case reported here this compensation was impossible because of the anhidrosis and, consequently, an interruption in the heat regulation had to occur.

Despite this, however, there was no proof that the patient would be as badly off during muscular activity. The possibility existed that an increase in dissipation of heat by conduction and radiation would be able to compensate for the absence of regulation by evaporation.

In order to throw more light on this question a series of experiments[11] were undertaken by means of Krogh's cycle ergometer, which permits exact evaluation of muscular activity.

During the experiments the room temperature was between 19.4 C. and 20.1 C. (66.9 F. and 68 F.) and the patient did work of 360 Kg. per minute, corresponding to an ordinary bicycle ride up a very slight incline. During the first two experiments the patient was fully dressed; during the third he wore only a suit of thin cotton underwear. By way of comparison, an identical experiment was performed on a normal person of the same age, height and weight, and who, dressed just as the patient, did the same amount of work. Figures 6, 7, 8 and 9 illustrate the results.

In the first two experiments when the patient was dressed and the possibility of giving off heat through conduction and radiation therefore was relatively poor, it was seen that both his pulse rate and the rate of respiration increased much more than in the healthy person. At the same time, contrary to the latter, the

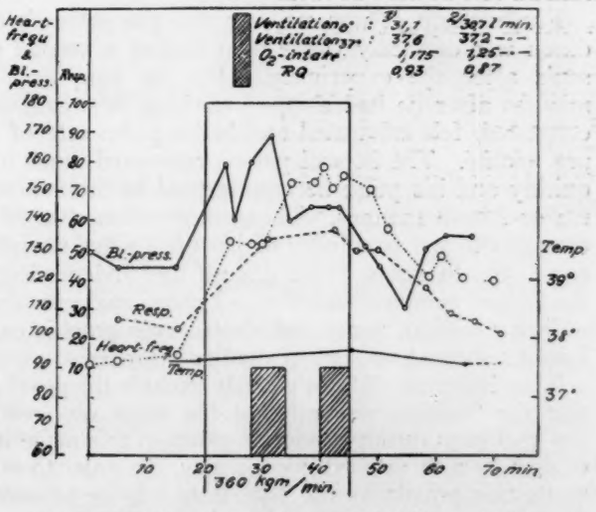


Fig. 7.—Experiment 2: Patient dressed, without ventilator.

patient suffered greatly from working. His skin was hot and red but dry. The other man's skin was moist both under his clothes and where it was exposed.

When similar work is done by normal individuals their blood pressure rises to 160 or 170 mm. of mercury systolic and, as experience has shown, it remains high during the entire period of work. In the second experiment, however, I saw that after the lapse of

11. The experiments were performed in the university zoophysiologic laboratory. Professor Krogh lent me the apparatus and Dr. Phil. Marius Nielsen performed the experiments on pulmonary ventilation and basal metabolism.

fifteen minutes the patient's blood pressure fell and simultaneously he stated that he felt exceedingly ill. At the same time the pulse rate became even more rapid than before.

On the other hand, I noted that the patient's temperature rose only approximately 0.1 degree centigrade during the actual work (in experiment 1, from 37.68 to 37.79 C.; in experiment 2, from 37.60 to 37.71 C.), on

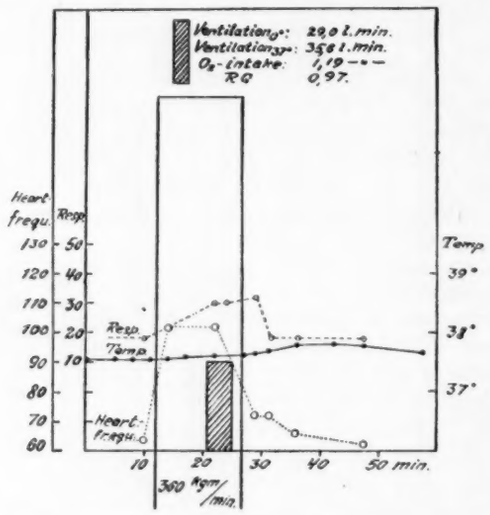


Fig. 8.—Normal person dressed, without ventilator, under the same conditions and doing the same amount of work as the patient in experiments 1 and 2.

the whole not more than in normal persons. This shows that contrary to Richardson's patient, who had a congenital lack of sudoriferous glands, this patient is able to regulate his temperature during increased heat production in the organism. This regulation, however, causes him severe discomfort; i. e., symptoms that remind one of cardiac insufficiency.

Furthermore, it was striking that the patient's condition was decidedly worse than that of a normal person's after the experiment. For as long as forty minutes after he had stopped working he was greatly congested, felt exhausted and had a pulse rate of 120 per minute. The normal person recovered much more quickly and his pulse became normal in the course of ten or fifteen minutes. These observations turned my thoughts to the possibility of his unpleasant sensations being due to latent heart disease and independent of the lack of perspiration. Yet as I mentioned previously, ordinary clinical, x-ray and electrocardiographic examinations showed no sign of cardiac disorder.

This, however, did not entirely exclude the possibility that the "reserve strength" of the heart was reduced and that even during moderate exertion this made itself evident by a threatened insufficiency. In order to investigate this possibility the patient had to be allowed to do the same amount of work under conditions that provided the best opportunity for the giving off of heat by means of heat currents, conduction and radiation.

Therefore the patient was subjected to the same sort of experiment as the foregoing one, but this time he had on only a suit of thin cotton underwear and a strong current of air from a fan was turned on him. As previously mentioned, normally the giving off of heat by means of conduction and currents is insignificant. These factors were, however, now given the opportunity of becoming important.

The result of the experiment (fig. 9) showed that the patient's heart was quite capable of meeting the demands placed on it under these conditions. It is seen that the patient's pulse rate did not increase abnormally, and soon after he had stopped work it returned to the original figure. Moreover, his rate of respiration increased only moderately and his blood pressure remained high during the whole time he was exerting himself. In addition, he was able to keep at work for forty-five minutes, against a maximum of twenty-five previously and, what is more, he stated that he was without subjective discomfort; indeed he maintained that he had not felt so well for years, since in all that time he had not been able to take such violent exercise without resultant indisposition.

In spite of his anhidrosis, the patient is able to maintain normal heat regulation during exertion. Yet this is possible only through redirection of heat regulation to heat elimination by means of conduction and radiation. In order that this may keep pace with the heat production in the organism, so violent a peripheral vascular dilatation has to take place in the patient that the blood is diverted to the dermic vessels to such an extent as to entail circulatory insufficiency. This is seen to appear in the second experiment (fig. 7) in which there was a fall in blood pressure plus a corresponding additional increase in pulse rate.

The metabolism tests show that the patient's consumption of oxygen while working corresponds to that of the healthy man. Since his basal metabolism is within the boundaries of normality, one must assume that his efficiency is equal to that of the normal individual (about 20 per cent).

Determinations of pulmonary ventilation prove that when dressed the patient's air exchange is somewhat larger than is normal. When he is undressed, it is less than in the normal individual. The deviations are, however, rather inconsiderable and no doubt lie within the physiologic fluctuation limit for untrained persons.

By means of determinations of the basal metabolism and pulmonary ventilation, it is possible to get an idea

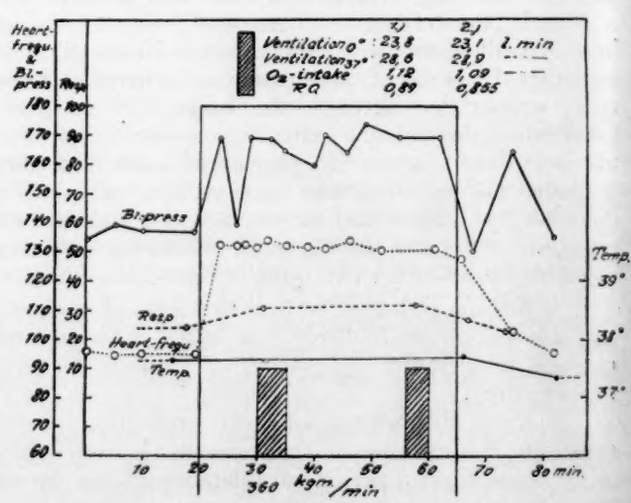


Fig. 9.—Experiment 3: Patient undressed (tricot) with a ventilator in the room.

of the heat production in the organism of the two persons experimented on, and since the bodily temperature is practically constant, one thereby gets a direct expression of the amount of heat given off.

If a mixture of fat, carbohydrates and protein undergoes combustion in the body, every liter of oxygen used is equal to 4.82 calories. According to this the patient's heat production was, in experiment 1, 5.8

calories per minute; in experiment 2, 5.7 and 5.8 calories per minute respectively, and in experiment 3, 5.4 and 5.25 calories per minute. The normal man's was 5.73 calories per minute in the same unit of size.

Approximately 27 Gm. of water-vapor per square meter is given off under the given degree of humidity in the room. It takes 580 gram calories of heat to evaporate 1 Gm. of water at 30 C. (86 F.); this applies both to pulmonary and to skin evaporation. On the basis of this, the loss of heat by evaporation from the lungs could be computed in all experiments. It proved to constitute the following percentage in the patient: experiment 1, 11 per cent; experiment 2, 11 and 10 per cent, respectively; experiment 3, 7.4 and 7.6 per cent. In the control subject it was 9 per cent of the total loss of heat.

In the patient, the remaining 5.15, 5.11, 5.26, 5.0 and 4.48 calories per minute had to be disposed of solely through currents of heat, conduction and radiation. The normal man, on the other hand, was able to give off the other 5.17 calories per minute both in this manner and by means of cutaneous evaporation.

Unfortunately we could not undertake any reliable weighing before and after the experiments. It is therefore impossible to give any definite figures as to how much of the cutaneous loss of heat was given off by the control subject in the form of perspiration. As mentioned, he perspired and his clothes were damp during the work. If, as seems reasonable in this moderately adipose person, from 2 to 3 Gm. of sweat was thus excreted per minute, it means (figured according to the heat used for evaporation) that about 30 per cent of the cutaneous loss of heat took place by means of evaporation. The patient, who is of about the same size and weight, had therefore to give off approximately 33⅓ per cent more heat per minute through conduction and radiation than would have been necessary if his sweat secretion had been normal.

As long as he works fully clad, he is forced to suffer such extreme dilatation of the cutaneous blood vessels, and thus such marked diversion of blood to the skin, that symptoms of circulatory insufficiency arise. When he is vigorously fanned and wears nothing but thin underclothing, conditions are so much improved that compensation does not endanger the circulation. The numerical values that we observed, however, permit only a rough estimate of conditions.

The peculiar thing about this case is, above all, the fact that the heat regulation is maintained at the expense of the circulation. Doubtless this is due to the organism having accustomed itself to existing conditions. In any case, it is quite the opposite of the frequently observed phenomenon of an elevation of temperature up to as high as 41 C. (105.4 F.) in untrained persons who are working under conditions unsatisfactory for the loss of heat (for example, marching soldiers).

After the examinations had been made, the patient was followed for two years and a half. He reports that his sweat secretion has not returned and his symptoms are unchanged, being especially pronounced in the summer. He gets on better in life since the invalidity court had him trained in clerical work; he is now engaged in sedentary, inside work and is able to retain his capacity for work.

### SUMMARY

A man with general anhidrosis, aged 27, until a long febrile illness (paratyphoid fever) six years prior to the examination had had normal sweat secretion. He complained of extremely distressing symptoms under circumstances in which sweat secretion normally takes place. By means of a series of pharmacologic and physical tests I verified the patient's statement that he could not perspire.

A biopsy from the skin showed that about one half of the sweat glands were present while the other half had undergone degeneration.

By means of a number of muscular activity experiments it was determined that during increased heat production in the body the patient's heat regulation was normal but that signs of circulatory insufficiency arose which must be ascribed to extreme vascular dilatation in the skin. This forms the basis for a compensating, excessive loss of heat through conduction and radiation. Continued observations of the patient during two years and a half showed that the symptoms remain unchanged.

## *Clinical Notes, Suggestions and New Instruments*

### A LUMBAR PUNCTURE NEEDLE FOR THE ACCURATE CONTROL OF SPINAL FLUID FLOW

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Any unnecessary and uncontrollable loss of spinal fluid while doing lumbar puncture for any purpose is undesirable. With the ordinary type of spinal tap needle the stylet has to be withdrawn completely to obtain spinal fluid or to make a spinal fluid pressure determination; and, to stop the flow, the stylet has to be reintroduced. This often causes an appreciable loss of cerebrospinal fluid. Also, with the needles in common use, spinal fluid will often flow along the under surface of the needle

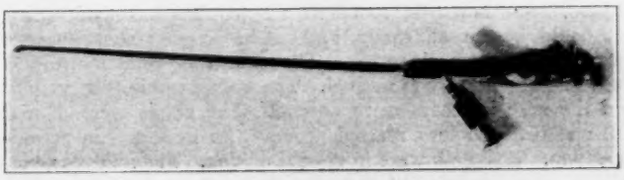

Fig. 1.—Appearance of needle.

for a variable distance before it drops into a collecting test tube or ampule, and in this way there is a spill. It occurred to me that it might be of advantage to attempt to prevent this loss of cerebrospinal fluid by designing a needle that would perhaps control more accurately the escape of cerebrospinal fluid.

The needle is the stereotyped lumbar puncture needle, to which an obliquely placed bar outlet has been added. A Luer

Fig. 2.—Section illustrating the mechanism.

type syringe will fit both outlets. This needle has an adjustable stylet, which it is not necessary to withdraw completely in order to obtain spinal fluid. On the horizontal bar of the handle there is a set screw, which, when properly adjusted, prevents the complete withdrawal of the stylet. Under these circumstances it permits spinal fluid to flow from the opening in the oblique bar. The stylet is beveled so that complete withdrawal is impossible when the screw is set, but a turn of the screw

From the Surgical Service of Harlem Hospital, Dr. C. S. B. Cassassa, director.

permits complete withdrawal if this is desired. A slight push inward on the stylet stops the flow of spinal fluid. When the spinal fluid is flowing, the oblique bar of the handle should point downward. To take a pressure reading or to inject fluids or air, the oblique bar should be turned upward 90 degrees, so that the two bars are on the same horizontal plane.

This needle has been used for obtaining specimens of spinal fluid for laboratory tests, for spinal anesthesia and for making manometric readings of spinal fluid pressure in the service of Dr. Louis T. Wright of this hospital. It has been used in a large number of cases and it seems to me and to other observers that it makes possible a hitherto undescribed refinement of the technic of lumbar puncture.

The Becton, Dickinson Company, Rutherford, N. J., made without charge the models used in this work.

## FATAL POISONING FROM SODIUM DINITROPHENOL

RALPH PURVINE, M.D., PROVIDENCE, R. I.

An Italian girl, aged 21, was admitted with a complaint of excessive perspiration, high fever and excessive thirst. In childhood she had measles, mumps and chickenpox and five years before admission had an appendectomy. The family stated that the patient had always been nervous since the operation and had been allowed to have her own way around the house.

For a time the patient had been taking capsules, one three times a day, of a preparation known commercially as "Nitro-Bese," for obesity. This had been prescribed for her by a licensed chiropractor. Because of an unfortunate love affair, the patient attempted suicide, which was successful, by taking forty-five such capsules, each containing 100 mg. These were taken at 5 p. m. on the day of admission. She had no ill effects until about 8:30 p. m. the same day, when she began to vomit, perspire and feel weak. She was seen by her family physician, who observed and treated her for about two hours. Her condition became so critical that admission to the hospital was advised at once, and the patient was admitted at 10:30 p. m.

The patient was well developed and slightly obese. She lay flat in bed, perspiring freely, very dyspneic, and with the skin flushed. She appeared to be in a state of semiconsciousness but could be roused easily, and when aroused she appeared unusually bright and active. The skin was very moist and flushed. The scalp was normal. The eyes, including the fundi, and the nose and ears were normal. The pupils were dilated and unequal, and they reacted promptly to light and in accommodation. The teeth were in good condition. The mucous membranes of the mouth and pharynx were quite red. The tongue was dry. The tonsils were not enlarged. The thorax was symmetrical. The expansion was equal. Vocal fremitus was not elicited. The percussion note was resonant throughout and the breath sounds were vesicular and soft. There were very fine crackling râles scattered over both lungs. The respiratory rate was 70 per minute and respirations were moderately full. The heart showed no precordial bulging, shock, thrill or impulses. The apex beat was in the fifth interspace in the midclavicular line. There was no increase in the areas of cardiac dulness. The heart sounds were all well heard, and no murmurs were present. The rate was 180 per minute, the rhythm regular, and the peripheral vessels showed no evidence of sclerosis. The breasts were well formed and developed, with no masses or tenderness palpable. The abdomen was slightly obese, with a scar 4 inches long in the right lower quadrant. The muscle tone was firm. There were no palpable masses or organs. There was no apparent tenderness. The biceps, triceps and radials were hypo-active but equal. The abdominal reflexes, knee jerks and achilles tendon reflex were absent. Babinski's sign was not present. There was no ankle clonus. The skin was hyperemic over the entire body, and the patient was perspiring profusely.

When she was first seen after admission she was rather easily aroused and able to give a fairly coherent story. Thirst was very marked. The patient's mental status concerning her attempted suicide was that of well being, almost approaching euphoria, and she expressed the desire that if she might die she would be most happy. She was given dextrose by vein, and fluids were forced by all routes. At the time of admission her temperature was 103 F. rectally and continuous alcohol sponges were applied. In spite of this the temperature continued to rise, and at the time of last recording it was 106. The patient's general condition continued to go rapidly downhill and three hours after admission she could no longer be roused, although her pulse was of good quality and her respiratory rate had slowed slightly. She died in a mild convulsion at 2:10 a. m., or approximately nine hours after ingestion of the drug.

The postmortem examination was performed by the medical examiner in conjunction with the toxicologist of the state of Rhode Island. A gross examination of the tissues showed them to be stained a light yellow throughout. The lungs were cherry red from congestion. The stomach contained from 6 to 8 ounces (200 cc.) of a yellowish fluid having a peculiar but unrecognizable odor. The mucosa contained many minute black ecchymotic areas. The duodenum and upper ilium were red and the vessels were congested. Congestion was also present in the lymph glands of the mesentery. The liver showed marked distention of the sinusoids with but little evidence of liver cell separation. The kidneys showed a marked hyperemia and swelling of the tubular epithelium. Degeneration of the cells of the tubules was present. There was marked congestion in the glomeruli. The spleen was markedly congested but otherwise negative. There was marked hyperemia of the lungs with hemorrhage into the air sacs. The lymph nodes of the mesentery showed a marked degeneration and hyperemia with necrosis of the centers. The mucosa of the stomach showed distended capillaries throughout. A chemical analysis of the body fluids showed a concentration of 0.012 Gm. of dinitrophenol per hundred cubic centimeters of blood.

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From the Medical Service of Cecil C. Dustin, M.D., Rhode Island Hospital.

## INVASION OF THE FEMALE GENERATIVE TRACT BY ASCARIS LUMBRICOIDES

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*History.*—Miss V. R., aged 21, was admitted to El Centro Hospital May 8, 1936, complaining of severe abdominal pain of eight days' duration. There was no vomiting, no diarrhea and no vaginal discharge. The last menstrual period was ten days before admission. This period was of usual amount but of short duration. The previous period was missed. She had had no menstrual irregularities before that time. She had never been pregnant.

*Examination.*—The patient was well developed and moderately well nourished. Her temperature was 100, pulse 104, and respiration 24. The examination was negative except for tenderness in both lower abdominal quadrants, more marked on the right. The vagina admitted two fingers readily. Bartholin's glands were not palpable. The cervix was small, firm, nulliparous, and without discoloration or inflammation. The fundus was anterior and fixed but not enlarged. There was thickening in both adnexal regions, more marked on the right, and both sides were exquisitely tender. There was slight tenderness in the culdesac.

The urine was normal. Blood examination revealed 12,000 white blood cells, with 80 per cent polymorphonuclears, 12 per cent lymphocytes and 8 per cent eosinophils. Hemoglobin was 85 per cent. Urethral and cervical smears were negative for gonococci. Examination of the stool revealed Ascaris lumbricoides 4 plus, Necator americanus 3 plus, Trichuris trichiura 3 plus.

*Operation and Result.*—May 10, spinal anesthesia was administered and the abdomen was opened in the midline. The uterus, fallopian tubes, sigmoid and several loops of the small intestine were bound in the pelvis by firm, inflammatory adhesions. The omentum surrounded and was firmly adherent to the right tube. Both tubes were greatly enlarged and inflamed. Encysted in the right tube were five full grown and viable round worms (Ascaris lumbricoides). There was a large hemorrhagic cyst of the right ovary, the size of an orange. Bilateral salpingectomy and right oophorectomy were done. One

From Ei Centro Hospital.

ascaris was found encysted in the culdesac, surrounded by purulent exudate. No fistulas were found. The appendix was normal. All surfaces were peritonized and the abdomen was closed with one Penrose drain in the culdesac. The immediate postoperative condition was good.

Two days after operation the drainage was fecal. On the first, second and twelfth postoperative days, ascarids were discharged through the incision. Hexylresorcinol crystalloids (because of low toxicity) were given on the second and seventh postoperative days. After operation, repeated examination of the stools and of drainage from the incision failed to reveal Ascaris ova. No ascarids were found in the stools. Six smears from the cervix and vagina showed no Ascaris ova and were negative for gonococci.

Fourteen days after operation the patient developed a fever to 105 F. and estivo-autumnal malaria was found in the blood smear. Atabrine with plasmochin was given. Fecal drainage ceased on the fourteenth postoperative day. The temperature and pulse remained normal after the sixteenth day and recovery was uneventful from that date.

## *Special Article*

## THE PHARMACOPEIA AND THE PHYSICIAN

# THE ACTION AND USE OF DIURETICS

### WITH ESPECIAL REFERENCE TO MERCURIAL COMPOUNDS

NORMAN M. KEITH, M.D.

ROCHESTER, MINN.

*This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and* THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.

### MERCURIAL COMPOUNDS

The proper use of mercury compounds as diuretics in the treatment of dropsy was a pertinent subject for discussion more than a century ago. Blackall [1] and Bright [2] were opposed to the indiscriminate use of mercury preparations in cases of renal dropsy, while Barlow [1] and Prichard [1] found them helpful in a number of such cases. In 1886 Jendrássik [3] showed that administration of mild mercurous chloride (calomel) in cases of cardiac edema caused marked diuresis and an increased excretion of chlorides. Calomel immediately came into vogue as a diuretic in many medical centers, but the excessive diarrhea that accompanied the diuresis gradually caused this drug to be discarded for less drastic remedies. Saxl and Heilig [4] in 1920, by demonstrating the excellent diuretic effect of the new organic mercurial compound merbaphen in the treatment of cardiac edema, revived the possibilities of mercury in the treatment of edema. Merbaphen, similarly to calomel, caused an increase in the excretion of both water and chlorides. Mersalyl and other organic mercurial compounds have been introduced in the last fifteen years, and together with merbaphen they now have an established place in the treatment of dropsy.

*Mode of Action.*—The diuretic action of mercurial compounds depends on the available amount of active mercury present. A large percentage of the mercury contained in the organic compounds, which now are so successfully employed for their diuretic effect, is excreted in the urine.[5] The excretion of mercury is accompanied by an increase in the volume of urine and an increase in the amount of chloride and fixed base in the urine. Thus the urine contains an excess of the essential constituents of edematous fluid. After the injection of the mercurial compound there is a latent period before diuresis begins. Melville and Stehle [6] have particularly pointed out that this latent period is longer after the injection of an organic than it is after the injection of an inorganic salt. In an experimental study of the effect of several well known diuretic substances on normal individuals, I [7] found that organic mercurials produced the most marked immediate diuresis.

Since the introduction of merbaphen there has been considerable controversy as to whether the diuretic action occurs solely in the kidney or whether this substance also has a general action on the tissues. The experiments of Govaerts [8] are important in this connection. He transplanted the kidney of one animal into the neck of another by anastomosing the vessels of the kidney and those of the neck. In one series of experiments, the kidney from an animal in active diuresis continued to act when transplanted into a normal dog. In the second series, in which a normal kidney was transplanted into the neck of an animal in active diuresis, the transplanted kidney failed to give a diuretic response. These experiments prove that merbaphen causes diuresis chiefly by its action on the kidney. There is the possibility however that an extrarenal action occurred during the latent period, as the transplantations were made at the height of diuresis. Melville and Stehle [6] have suggested that during the latent period the general tissues slowly liberate mercury from its organic combination. Bieter's [9] experiments, in which he added mercurial compounds to blood plasma in vitro, point to an extrarenal action. Certain clinical observations can also best be explained on the basis of a general effect on the tissues. In some cases of serious cardiac or hepatic disease in which there is no renal impairment, administration of mercurial compounds may release the ascitic or edematous fluid. In other cases in which the value for the chloride in the plasma is low, administration of mercurial compounds will not produce diuresis until the value for the chloride in the plasma has been raised to normal.[10] There is some evidence that the amount of sodium in the serum must also reach a certain level before administration of mer-

From the Division of Medicine, the Mayo Clinic.

1. Quoted by Bright.[2]
2. Bright, Richard: Cases and Observations, Illustrative of Renal Disease Accompanied with the Secretion of Albuminous Urine, Guy's Hosp. Rep. **1**: 338-379, 1836; Tabular View of the Morbid Appearances in 100 Cases Connected with Albuminous Urine, with Observations, ibid. **1**: 380-400, 1836.
3. Jendrássik, Ernst: Das Calomel als Diureticum, Deutsches Arch. f. klin. Med. **38**: 499-524 (April 22) 1886.
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8. Govaerts, Paul: Origine rénale ou tissuelaire de la diurèse par un composé mercuriel organique, Compt. rend. Soc. de biol. **99**: 647-649 (July 27) 1928.
9. Bieter, R. N., and Wright, H. N: Fundamental Studies on the Pharmacology of Mercury Diuretics, in Berglund, Hilding, and Medes, Grace, with the collaboration of Huber, G. C.; Longcope, W. T., and Richards, A. N.: The Kidney in Health and Disease, Philadelphia, Lea & Febiger, 1935, pp. 701-708.
10. Keith, N. M., and Whelan, Mary: A Study of the Action of Ammonium Chloride and Organic Mercury Compounds, J. Clin. Investigation **3**: 149-202 (Oct.) 1926.

cury will produce diuresis.[11] These observations with regard to the concentration of chloride and sodium in the plasma and serum respectively indicate that some substances must have an optimal concentration in the plasma or serum and probably in other tissues, before renal action can occur. In renal edema, mercury appears to have a combined action; that is, it affects both the kidneys and other tissues. There is almost unanimous agreement that the renal action of mercury is attributable to a specific effect on the cells of the renal tubules, which leads to inhibition of tubular absorption of water and chlorides.

*Clinical Results.* — Since the introduction of merbaphen as a diuretic in 1920, it has been used in many types of edema, and the results often have been satisfactory. The clinical results obtained in 200 cases at the Mayo Clinic by a group of workers, including myself,[12] are submitted as typical of those secured by many physicians in different institutions. The control of diet and fluid intake is very important.[13] We employed compounds of organic mercury alone or in combination with other diuretic substances. These patients had cardiac disease, hepatic disease, renal disease, chronic lipoid nephrosis, polyserositis, myxedema, intra-abdominal malignant disease with ascites, and general edema of indeterminate etiology. De Takáts [14] has reported that good diuretic action followed the administration of a mercurial compound in cases in which edema was attributable to thrombophlebitis. The diuretic results in our series of cases and in cases reported by others were most satisfactory in cardiac disease. A decrease of from 50 to 80 pounds (22.7 to 36.3 Kg.) not infrequently occurred.[15] The diuresis which follows the administration of mercurial compounds is usually much more satisfactory than that which follows the administration of digitalis or compounds of caffeine. When the dependent edema is excessive, it increases the load on the heart muscle so that early use of an organic preparation of mercury as a diuretic is indicated. Diuresis thus helps to restore myocardial function. The results of the administration of mercurial compounds in cases of lipoid nephrosis were often as good as they were in cardiac disease. The effects in hepatic disease, particularly cirrhosis with ascites, were not so good as they were in the two previously mentioned conditions, although they compared favorably with the results obtained in cases of chronic glomerulonephritis with edema. The immediate results in myxedema were satisfactory. Both the temporary and the permanent effects obtained in a small group of cases of indeterminate ascites and edema were surprisingly good. The general consensus seems to be that, given a case of refractory edema, the therapeutic test with organic mercury should be considered.

*Dose and Toxicity.*—It has been the usual procedure to inject intravenously 0.5 cc. of a given compound of organic mercury as an initial trial dose. If no toxic effects are evident, 2 cc. is injected every three or four days as long as there is a distinct diuretic response. If diuresis does not occur after two or three injections, other diuretics should be tried. Patients who have chronic edema have been given repeated doses of organic mercury for several years with beneficial action. The case reports of Wiseman,[16] Smith,[17] and Maxwell, Scott and Harvey [18] are pertinent in this connection. The latter gave 240 cc. (198 injections) of mersalyl to a patient with recurring cardiac edema, in five years. At necropsy, no renal disease was found. These authors advised a dose of 1.2 cc. of mersalyl for repeated injections for a prolonged period. Organic mercury, when given by mouth, has not proved satisfactory. There have been several reports, including that of Fulton,[19] of good action following the rectal administration of organic mercury. The lethal dose of mercury in the form of bichloride and merbaphen has been estimated for rabbits.[20] It varies from 2.5 to 5 mg. of mercury for each kilogram of body weight. The maximal dose tolerated by the rabbit is 3 mg. for each kilogram of body weight, and Keith and Johnstone [21] demonstrated that a similar amount is tolerated by the dog. Applying this dose to an adult human being who weighs 70 Kg., the theoretical dose that could be tolerated by a human being would be 6 cc. of merbaphen, a dose that is three times greater than the usual injected.

The distressing reactions that have actually been seen after the injection of organic mercury are stomatitis, diffuse dermatitis, diarrhea, hematuria and renal insufficiency. Luckily, these reactions are rare. They occurred more frequently after administration of merbaphen than they did after the administration of mersalyl. If administration of the drug was discontinued for from seven to ten days, the drug often could be administered again and would produce satisfactory effects. Mersalyl, in my hands, has been more toxic locally than has merbaphen. Wood,[22] on the other hand, had the opposite experience and found that merbaphen was more toxic locally. Sloughs are likely to occur in obese, edematous patients, who often have small peripheral veins, so that the injecting needle enters the lumen with difficulty. Dilution of mersalyl or merbaphen in 0.9 per cent solution of sodium chloride or in the patient's own serum should prevent such local sloughs in most cases. Melville and Stehle [6] performed experiments on dogs, in order to compare the diuretic effects of mercury bichloride and organic mercury. They dissolved the former drug in an excess of the dog's own serum and found that the injection did not produce any local or general untoward reaction. He recalled Lister's [23] experiments, which were carried out in 1884 and which showed that mercury bichloride was soluble in an excess of horse serum and that it still had antiseptic properties in such a solution.

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### ACID-PRODUCING SALTS

Since the introduction of calcium chloride as a diuretic by Schultz[24] in 1918, several other acid-producing salts have been used and accepted as having diuretic properties. These include ammonium chloride[25] and ammonium nitrate.[26] The diuretic action of these salts depends on the administration of a comparatively large dose and on the liberation of the acid radical within the body. For example, in the intestine, calcium chloride is split; the calcium in large part remains there unabsorbed, while the chloride readily passes through the intestinal wall. In the case of ammonium salts, which are readily absorbed, the ammonia is soon converted into urea and the acid radical liberated. The diuretic action of acid-producing salts is thought by many investigators to be caused by the shift in the acid-base equilibrium to the acid side. I believe there are additional factors, including a specific effect of the individual acid radical. The nitrate radical appears to have the most marked diuretic effect of the acids so far studied. The chloride radical produces the most marked shift in the acid-base balance toward the acid side and is particularly helpful in clinical cases of edema in which the value for chloride in the plasma is abnormally reduced; however, severe acidosis has occurred, and this fact must be kept constantly in mind when giving large daily doses of ammonium chloride. Methemoglobinemia may develop after the administration of ammonium nitrate[27] but soon disappears if the administration of the salt is promptly discontinued. Both ammonium chloride and ammonium nitrate may give rise to a moderate degree of renal insufficiency.[12] This effect is usually temporary. Evidence from different sources seems to indicate that the change in acid base balance to a more acid condition is the cause of the decrease in renal function. If severe renal insufficiency exists before these two salts are administered, their ingestion may give rise to retention of nitrates or to chloride acidosis, with their accompanying toxic symptoms. The administration of these salts is contraindicated when the value for the urea is 75 mg. or more per hundred cubic centimeters of blood.

The daily doses recommended for diuretic purposes are as follows: calcium chloride, 10 Gm.; ammonium chloride, 9 Gm.; ammonium nitrate, 12 Gm.; these doses are much larger than usually recommended and mentioned in the Pharmacopeia. Ammonium chloride and ammonium nitrate in my experience are best administered in doses of 0.5 Gm. as enteric coated pills.

### POTASSIUM SALTS

For two centuries, certain potassium salts have been employed as diuretics in clinical medicine. Wilks and Taylor[28] used potassium nitrate successfully in the treatment of dropsy in 1863. In 1920 Blum[29] and Magnus-Levy,[30] and Barker[31] in 1932 were able to show that potassium chloride could be administered safely by mouth in relatively large doses and that it frequently produced a satisfactory diuresis. It occurred to me in 1932 that potassium nitrate might be the salt of choice if potassium itself should have an additional diuretic action to the diuretic action of the nitrate radical. Since then I have been able to show that, when ingested by mouth, potassium salts, including the chloride, nitrate, bicarbonate, acetate and citrate, have a greater or lesser diuretic effect when administered to normal men.[32] After administration of each of these salts there was an increase in volume of urine and a rapid and efficient excretion of potassium in the urine. In fact the kidney was able to concentrate the potassium delivered to it by the blood serum approximately fifty times. Lack of absorption by the renal tubules is the most plausible explanation of this concentration of potassium. The reaction of the urine invariably became more alkaline, and after administration of potassium bicarbonate, potassium acetate or potassium citrate the $p_H$ of the urine approached 8.0, a value that had been obtained previously after administering large amounts of similar salts of sodium. Potassium nitrate caused a relatively greater diuresis and greater increase in the excretion of chloride and sodium than did any of the other salts. Potassium chloride was next in efficiency, and still less efficient were potassium bicarbonate, potassium acetate and potassium citrate. Binger and I[32] administered potassium salts to a series of sixty patients who had edema that was attributable to various factors. Potassium nitrate was the salt of choice, although the chloride was administered to several patients and the bicarbonate was given to one patient. The diuretic results were very satisfactory in 50 per cent and fair in 33 per cent of cases; no diuretic action was noted in 18 per cent of cases. An increased urinary output was thus obtained in approximately 80 per cent of the cases.

To avoid toxic effects in cases of cardiac edema, Magnus-Levy[30] and Blum[29] advised giving small initial doses of potassium chloride. This has also been our procedure at the clinic in cases of edema in which there is severe renal insufficiency. However, in cases of renal dropsy in which there is extreme oliguria or anuria, or a value for the urea that is greater than 100 mg. per hundred cubic centimeters of blood, potassium salts should not be administered. In one case a concentration of 100 mg. of urea per hundred cubic centimeters of blood did not prevent a satisfactory diuresis. My results with the administration of potassium nitrate in cases of renal edema appear to be better than those obtained with ammonium nitrate. This may be attributable to the rapid excretion of potassium and to the shift in acid-base balance to the alkaline side. Since the preceding precautions were adopted at the clinic four years ago, we have not observed an unmistakable toxic effect that was attributable to the potassium radical.

The amount of a given salt necessary to produce diuresis is considerably greater than the dose recommended in the Pharmacopeia. The usual initial daily dose of potassium chloride was 9 Gm., and that for the nitrate and the bicarbonate was 12 Gm. Some patients

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26. Jacobs and Keith.[15] Keith, N. M.; Whelan, Mary, and Bannick, E. G.: The Action and Excretion of Nitrates, Arch. Int. Med. **46**: 797-832 (Nov.) 1930.
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28. Wilks and Taylor, A. S.: A Large Quantity of Nitrate of Potash Was Taken Medicinally: Elimination of This Salt by the Urine: With Remarks, Guy's Hosp. Rep. **9**: 173-179, 1863.
29. Blum, Léon: Recherches sur le rôle des sels alcalins dans la pathogénie des oedèmes: l'action diuretique du chlorure de potassium, Presse méd. **28**: 685-688 (Sept. 29) 1920.
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31. Barker, M. H.: Edema as Influenced by a Low Ratio of Sodium to Potassium Intake: Clinical Observations, J. A. M. A. **98**: 2193-2197 (June 18) 1932.
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were able to take a 10 per cent solution of a salt without discomfort. Others complained of epigastric discomfort or even complained of nausea. Administration of the nitrate or the chloride in doses of 0.5 mg., in the form of an enteric coated pill, has been most satisfactory. This corresponds with our previous experience with the administration of ammonium chloride and ammonium nitrate.

### CAFFEINE OR PURINE DIURETICS

Caffeine has been recognized as a diuretic in cases of dropsy since 1840, but it was not until von Schroeder [33] in 1887 performed his classic experiments, which demonstrated the effect of caffeine in normal rabbits and pigeons, that there was a scientific basis for its diuretic action. He demonstrated that caffeine with sodium benzoate increased both the volume and the solid constituents of the urine. He believed that its action was chiefly attributable to a direct renal effect. Since von Schroeder's work, numerous investigators have shown that the increased urinary excretion of solids was attributable to chlorides and fixed base, the latter being usually sodium.

The renal action of caffeine has been a subject of much research. Richards and Plant [34] and Cushny and Lambie [35] showed conclusively with rabbits that caffeine could produce a diuresis at times when the renal blood flow is not increased. Recent experiments on nonanesthetized rabbits by Walker, Schmidt, Elsom and Johnston [36] confirmed this observation. Richards' [37] observations that caffeine causes an increased capillary flow in the glomeruli of the frog may mean that there is increased capillary permeability. Recent advances in renal physiology suggest that different types of diuretics might have specific actions on the glomeruli or the tubules. Schmitz,[38] by employing the creatinine clearance test, was able to show that merbaphen and aminophylline had a different effect on renal excretion of creatine. Herrmann and associates obtained similar results clinically in cases of cardiac edema. Because there is some question as to the exact significance of creatinine clearance by the kidney, I do not feel that the results of Schmitz [38] and of Herrmann and his associates [39] have yet established the fact that aminophylline exerts its diuretic effect by increasing glomerular excretion. Perhaps, after all, von Schroeder's direct renal action may be attributable to the effect of caffeine on the cells of the renal tubules.

Several facts have indicated that extrarenal action may play a very important rôle in diuresis produced by caffeine. Curtis [40] has shown that caffeine diuresis is accompanied by slight but definite rise in total chlorides in the blood. He also cited experiments on rabbits in which the diuresis was inhibited by the intraperitoneal injection of distilled water and hypotonic solutions of sugar.

Meinertz in 1904 [41] was the first to show by carefully controlled experiments on patients that administration of theobromine caused an increased excretion of chlorides as well as of water. Since then theophylline, aminophylline, and other xanthine compounds have been used both experimentally and clinically, with similar results. Two normal men whose intake of fluids and diet was controlled, as it was in our observations of the action of potassium salts, were given aminophylline. This produced a slight transitory increase in urine volume and urinary excretion of chlorides.[7] These compounds of caffeine were given to patients who have dropsy and have produced marked diuresis. The diuretic effects are neither so great, so rapid nor so uniform as are the effects of organic mercury. According to most workers, the present usefulness of these xanthine derivatives, alone or in combination with other diuretics, has been chiefly in cases of edema with severe renal insufficiency; in such cases these derivatives may produce satisfactory diuresis without any apparent toxic effect.

The xanthine diuretics employed clinically are theobromine with sodium salicylate, which is given in doses of from 3 to 4 Gm. daily; theophylline, which is given in doses of 1 Gm. daily; theophylline with ethylenediamine (aminophylline), which is given daily in doses of from 0.8 to 1 Gm. by mouth or intravenously in solution, and theophylline with sodium acetate (theocin), which is given in doses of 0.8 Gm. daily. All four preparations, if given continuously for some time by mouth, are likely to give rise to nausea and vomiting. A newer compound, in which sodium is replaced by calcium, namely, theobromine calcium salicylate (theocalcin), appears less likely to cause gastro-intestinal disturbances.

### USE OF COMBINED DIURETICS

The use of diuretic mixtures is an old therapeutic principle in the treatment of dropsy. A frequently prescribed combination was digitalis, squills and mercury, but the results were often disappointing because of inadequate dosage. In 1924 and 1925 Whelan, Barrier and I [42] employed this principle in the treatment of edema and found that ammonium chloride and the compounds of organic mercury were much more effective when used in combination than they were when used singly. Later, Jacobs and I [15] substituted ammonium nitrate for ammonium chloride, as the former caused less digestive disturbances and possessed greater diuretic properties. Our clinical and experimental studies on the combined action of ammonium nitrate and compounds of organic mercury demonstrated that both types of substances, that is, an acid-forming salt and mercury, have the same fundamental property of removing water, chlorides and fixed base from the organism. The combined action was therefore suggested as a simple cumulative effect of the two substances. Blumgart and his associates [11] also considered that their results demonstrated such an additive effect. Ethridge, Myers and Fulton [43] have lately reported a thorough experimental study of this problem in dogs. Their results show clearly that in

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41. Meinertz, J.: Versuche über Diurese insbesondere über die Wirkung des Theocinnatrium aceticum, Therap. Monatsh. **18**: 275-285, 1904.
42. Keith, N. M.; Barrier, C. W., and Whelan, Mary: The Diuretic Action of Ammonium Chloride and Novasurol in Cases of Nephritis with Edema, J. A. M. A. **85**: 799-806 (Sept. 12) 1925. Keith, N. M., and Whelan, Mary: The Combined Diuretic Action of Certain Acid-Producing Salts and Organic Mercury Compounds, Tr. A. Am. Physicians **41**: 181-188, 1926.
43. Ethridge, C. B.; Myers, D. W., and Fulton, M. N.: Modifying Effect of Various Inorganic Salts on the Diuretic Action of Salyrgan, Arch. Int. Med. **57**: 714-728 (April) 1936.

dogs the combined effect of salyrgan and an acid-forming salt is greater than the sum of the effect of each when administered separately and therefore is not simply a cumulative effect. They found a constant decrease in the carbon dioxide combining power of the blood plasma of from 9 to 15 volumes per cent and suggested that this change in acid-base balance was the cause of the diuresis. I think that these changes in the plasma are too slight to account entirely for the diuresis and I believe that there are other etiologic factors, such as the specific effects of the individual acid ions, which must be considered. Further studies are needed to clarify the complicated equilibriums involved.

The combined use of diuretics has a distinct place in the present-day treatment of dropsy. The study of 200 cases of various types of edema, which was mentioned previously, showed how frequently the edema could be controlled. The best results were obtained when from 20 to 30 Gm. of such acid-producing salts, as calcium chloride, ammonium chloride and ammonium nitrate, or when such salts as potassium nitrate and potassium chloride were administered before the organic mercury was injected intravenously. The administration of larger doses of diuretic substances in part is responsible for these results, but physicians should be on the alert for the possible development of untoward reactions. In my opinion, toxic effects are becoming less frequent and, as our knowledge increases, they will become fewer. For example, since potassium nitrate and potassium chloride have been substituted for the ammonium salts, when employed either alone or combined with organic mercury, evidence of acidosis and increased renal insufficiency has almost disappeared. The favorable clinical reports of the action of a substance containing both the caffeine derivative theophylline and organic mercury indicate the future possibilities of combined diuretics.[44]

## Council on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

FRANKLIN C. BING, Secretary.

The Council on Foods of the American Medical Association records with deep sorrow the death of

### EDWIN OAKES JORDAN

When Dr. Edwin Oakes Jordan died of cerebral thrombosis at the age of 70, the University of Chicago lost an honored professor emeritus of bacteriology, the medical sciences an outstanding investigator and the Council on Foods a distinguished member. Professor Jordan was born in Thomaston, Maine, on July 28, 1866. He received his formal education at the Massachusetts Institute of Technology and at Clark University; the latter institution awarded him the degree of Doctor of Philosophy in 1892. In that year he was appointed associate in anatomy at the newly organized University of Chicago. He was made professor of bacteriology in 1907 and held this position until 1933, when he became professor emeritus.

Professor Jordan's early work was in biology; his doctoral dissertation was entitled "The Habits and Development of the Newt." But early in his career when a student of Professor Sedgwick he became interested in bacteriology and gradually devoted more time to investigations in this field. In 1896 he studied at the Pasteur Institute. It was as an established bacteriologist that in 1900 he published an important paper on the bacterial self purification of streams. This now classic contribution represents work undertaken at the request of the Sanitary District of Chicago and carried out with E. E. Irons, who assisted him in making observations. Dr. Jordan determined bacterial counts on water from various locations along the drainage system of Chicago, particularly from Bridgeport southward along the Illinois River to the junction of the latter with the Mississippi above St. Louis. The results showed conclusively that the number of bacteria becomes less as one examines water samples farther and farther away from the source of contamination.

Dr. Jordan thus contributed at an early stage of his career to the solution of important questions of public health. He investigated the relationship between typhoid fever and contaminated water supplies, and he reported on the longevity of typhoid bacilli in sewage. This and similar work contributed largely to the development of "Standard Methods for the Examination of Water and Sewage" of the American Public Health Association. Professor Jordan's interest in the epidemiology of paratyphoid infections persisted throughout his entire career; it may be said that beginning in 1913 he was mainly responsible for the annual reports which have appeared in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION on typhoid mortality in large cities in the United States. His work in epidemiology was not limited, however, to the study of the typhoid group of organisms. He is the author of at least a dozen papers on the epidemiology of influenza and other respiratory diseases.

He contributed much to our knowledge of bacterial morphology; possibly his early training in the structural aspects of biology may have been responsible for his interest in this important field. Specifically he should be credited with important observations on variations in bacteria and with the development of practical methods that are now used to differentiate the paratyphoid-enteritidis group of organisms.

Perhaps Dr. Jordan is best known for his fundamental contributions to the epidemiology of food poisoning, particularly that of bacterial origin. His monograph on "Food Poisoning and Food Borne Infection" is a classic in this special field. The importance of staphylococci as a source of food poisoning was emphasized in conjunction with G. M. Dack. In collaboration with associates, Professor Jordan showed that staphylococci are capable of producing an exotoxin which, if introduced orally, is capable of causing severe intestinal disturbance; the toxin is destroyed by boiling.

Dr. Jordan will be long remembered as a teacher, and as author and co-author of important textbooks. Since the organization of the Department of Hygiene and Bacteriology of the University of Chicago in 1913, approximately sixty students have taken their doctorate work in that department. The majority carried out the research for their dissertations under Dr. Jordan's immediate direction. The list of distinguished investigators who began their work in his laboratory—and this includes many who did not complete the work for the degree of Ph.D. in this field—is imposing. These men and women and others who were fortunate enough to come under the influence of Professor Jordan will always remember him as an earnest, scholarly investigator and as a courteous and kindly adviser. Many other persons will remember him as a gifted writer in the many fields to which he so richly contributed.

In his later years Dr. Jordan was called on to serve on innumerable boards and committees. He was elected a member of the Council on Foods in 1933. He was a member of many scientific and medical societies and was honored in the spring of 1936 by election to membership in the National Academy of Sciences. Because of his ability to concentrate on the fundamental principles and essentials of each task, he was able to accomplish a prodigious amount of work. In the words of Ludvig Hektoen, "the results of his work stand well the tests of time."

44. Crawford, J. H., and McDaniel, W. S.: Some Observations on Mercurial Diuretics, Ann. Int. Med. **8**: 1266-1273 (April) 1935. Certain substances such as thyroid extract (Epstein, A. A.: Thyroid Therapy and Thyroid Tolerance in Chronic Nephrosis, J. A. M. A. **87**: 913-918 [Sept. 18] 1926), parathyroid extract (McCann, W. S.: Diuretic Action of Parathyroid Extract-Collip in Certain Edematous Patients, ibid. **90**: 249-253 [Jan. 28] 1928), compounds of bismuth (Stockton, A. B.: Bismuth Diuresis and the Blood and Urinary Changes Under Clinical Conditions, Arch. Int. Med. **50**: 142-149 [July] 1932; Mehrtens, H. G.; Hanzlik, P. J.; Marshall, D. C., and Brown, N. S.: Bismuth as a Diuretic, J. A. M. A. **91**: 223-225 [July 28] 1928) and hypertonic solutions of dextrose and sucrose, when used clinically, have been found to produce diuresis. Their use has not been general, and lack of space does not permit detailed comment in this article.

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SATURDAY, DECEMBER 19, 1936

## GASTRIC ACIDITY AND EXPERIMENTAL ULCER

The view that ulcers of the gastro-intestinal tract are due to a local loss of resistance on the part of the mucosa to the digestive activity of the gastric juice has been prominent since the time of John Hunter, more than 150 years ago. Indeed, the term "peptic" ulcer itself is an expression of that view. Theories to explain the local loss of resistance have been many. In general, as has been pointed out,[1] these have been concerned with a lowering of the normal resistance alleged to be conferred on the mucosa by such factors as a general "vital" principle, the protective action of gastric mucus, the neutralizing effect of alkaline blood in the capillaries of the mucosa, or the presence of an antipepsin in the mucosa. Recent studies, however, have tended to emphasize the immediate importance of a positive factor; namely, an increase in the amount of or activity of some corrosive agent in the gastric juice. The constant observation that ulcers occur only in those parts of the alimentary tract exposed to gastric juice, namely, the lower part of the esophagus, the stomach, the first part of the duodenum, the jejunum adjacent to the stoma of a gastro-enterostomy and the ileum adjacent to the entrance of Meckel's diverticulum, which contains a gastric type of mucosa, lends some support to this view.

Perhaps the most convincing evidence that an excessive amount of some constituent of the gastric juice is a primary etiologic factor in ulcers of the gastro-intestinal tract has come from a series of experiments, chiefly at the Mayo Clinic[2] and at the University of Chicago,[1] involving surgical alterations of the alimentary tract of the dog. Investigations in the former laboratories[2] demonstrated that ulcers in the jejunum almost invariably occurred in dogs in which this portion of the intestinal tract was anastomosed to the stomach and the duodenum was drained into the ileum. The ulcers usually occurred near the line of the anastomosis. Since ulcer formation could be prevented by draining the duodenal secretions into the jejunum near the anastomosis, the conclusion that the lesions were due to the absence of the neutralizing effect of the duodenal secretions appeared warranted. Further evidence that high gastric acidity is a primary factor in the production of experimental ulcer has been obtained in a series of interesting experiments by the Chicago investigators.[1] First it was shown that certain tissues, such as spleen, kidney and sections of the duodenum or other portions of the small intestine, implanted in "windows" of normal stomachs remained intact whereas similar transplants into openings made in isolated gastric pouches were promptly digested away. Obviously, the most important difference between the conditions of these two experiments is the fact that the implants in the normal stomach were exposed to the action of gastric contents whereas those in the isolated pouch were exposed to pure gastric juice. As is well known, the principal difference between gastric contents and pure gastric juice is the higher free acid content of the latter, since partial neutralization by food and regurgitated duodenal contents cannot occur in the isolated pouch. Even more convincing results were obtained by the production of lesions in the gastric mucosa itself. Chronic, progressive perforating ulcers were produced in the mucosa of isolated gastric pouches by mechanically preventing the prompt drainage of gastric juice and thus causing it to remain in contact with the gastric wall for unusually long periods. If generalization is warranted from results on living frog muscle,[1] the concentration of acid necessary for the digestion of living tissue is from 0.1 to 0.15 per cent. Within wide limits, the concentration of pepsin appears to be of no importance. Usually the amount of free acid present in pure gastric juice obtained from pouches exceeded the critical level required for the digestion of intact tissues.

Other recent work[3] likewise places special emphasis on the importance of the acid of gastric juice in the production of experimental ulcers in the dog. As others have observed, it was found that ulcers developed in the jejunum just below the point of anastomosis to the pylorus, if the duodenal secretions were drained into the lower ileum. However, if the duodenal fluid was drained into the jejunum a few inches below the point of the gastrojejunal anastomosis or into the stomach itself, ulcers did not occur. Analysis of the gastric contents in both instances showed that the acidity was less than that apparently required for the digestion of living tissue.

Although the foregoing results appear to warrant the conclusion that increased acidity is probably the primary etiologic factor in the production of experimental ulcer in dogs, it cannot yet be stated that this conclusion

1. Dragstedt, L. R.: Some Physiologic Principles Involved in the Surgical Treatment of Gastric and Duodenal Ulcer, Ann. Surg. **102**: 563 (Oct.) 1935.

2. Mann, F. C., and Williamson, C. S.: The Experimental Production of Peptic Ulcer, Ann. Surg. **77**: 409 (April) 1923.

3. Wilhelmj, C. M.; O'Brien, F. T.; McCarthy, H. H., and Hill, F. C.: The Rôle of the Duodenal Secretions in the Prevention of Experimental Jejunal Ulcer, Am. J. Physiol. **117**: 79 (Sept.) 1936.

applies to the disease occurring in man. However, as has been pointed out by Dragstedt,[1] the frequency of the occurrence of abnormally high gastric acidity in patients with gastric or duodenal ulcer indicates that the relationship may be more than casual.

## ANOREXIA NERVOSA

Sir William Gull in 1868 referred to "a peculiar form of disease occurring mostly in young women, and characterised by extreme emaciation." This condition, which involves a refusal to eat, has since become known as anorexia nervosa. Ryle,[1] in the Schorstein Memorial Lecture delivered at the London Hospital October 15, discussed the present state of knowledge of this disorder. His analysis was based on a personal experience of fifty-one cases seen during sixty-one years of consulting practice. "In common with other psychoneurotic disorders," he states, "the incidence is higher in the middle and upper classes. . . . Motive and opportunity and perpetuating causes are more frequent in homes where circumstances do not demand active physical occupation and where sensitive natures and solicitude flourish side by side." There was specific mention of nervous heredity in only nine cases in the whole series. These included one instance of a drunken parent and two instances of one insane parent. A closer inquiry would, he believes, reveal a far higher incidence of "nervousness" in the immediate family history of these cases. Of the initiating factors in the young women (who form the largest group affected), emotional crises in the shape of love affairs, broken engagements and possibly school attachments may be considered to be important. "Slimming," usually instigated by the ridicule of school friends on account of adolescent plumpness, is generally considered second in importance to these emotional crises. In several cases poorly conducted homes were largely to blame. In nine cases the anorexia seemed to develop on a basis of genuine physical illness or after an operation. The probability of multiple contributory factors, however, must be constantly considered.

The onset of the condition is usually insidious. The most pronounced clinical characters are loss of weight, poor appetite and amenorrhea. The important factors of the clinical examination are the prominence of the bones, the scaphoid abdomen and absence of anemia. There is a tendency to the development of excess hair on the body and face. The pulse is slow and the blood pressure is usually low. Organic disease cannot usually be discovered. The prognosis in the psychoneurotic group is generally good if diagnosis is not too long postponed and appropriate treatment is arranged. Complications may occur but are relatively rare. Evidences of deficiency disease are exceptional. Pulmonary tuberculosis may be superimposed and must always be thought of as a possible complication.

The first essential of treatment, Ryle believes, is to explain to the patient and the parents separately the nature of the disease in the simplest and most direct terms. Strong assurance is highly important. Firmness, kindness and tact must be employed in just proportions, and the dietary carefully watched. In some cases it may be necessary to sit with the patient until each meal is finished. Treatment should be started in bed and continued there until definite improvement can be noticed. Psychoanalytic methods he thinks are unwise and may do harm. Explanation, reassurance, distraction and fit treatment of the starvation are usually adequate. The key to real advancement, Ryle states, still lies largely with earlier diagnosis and rational preventive treatment.

## PATHOGENIC FUNGI

In a recent review on pathologic fungi [1] it is pointed out that there is at present a growing tendency to give increased attention to the etiologic relationship of such organisms to disease particularly of the ear, nose, throat and lower respiratory system. The author states that in the routine of a private practice he has observed seventeen patients with verified fungous infection of the ear, nose, throat and respiratory tract during the past twelve months. Vigilance is required, therefore, on the part of practicing physicians for the detection of patients affected by such infestations.

Clinical reports relating certain species of fungi to disease are numerous. The yeastlike fungus Monilia, for example, is known to produce a group of conditions, known as moniliasis, involving the skin, mucous membranes and viscera. This type of fungus produces distinct lesions of the oral and pharyngeal cavities (thrush) and even of the bronchopulmonary system. Pulmonary moniliasis may be accompanied by symptoms which simulate those of pulmonary tuberculosis. Indeed, the clinical picture of severe pulmonary moniliasis is that of advanced tuberculosis, there being a cough, expectoration, hemoptysis, septic fever, night sweats and emaciation. A positive diagnosis of the disease may be established by the constant finding of Monilia in the sputum. Likewise, certain species of the genus Sporotrichum are known to be pathogenic to man. These may produce granulomatous processes, termed sporotrichosis, in the skin and mucous membranes and in the bronchopulmonary and other systems of the body. Also certain species of Blastomyces, Actinomyces and Aspergillus are included among the different types of fungi reported to be pathogenic to man, the disease processes again involving particularly the ear, nose, throat and respiratory tract.

Because of the increasing numbers of reported occurrences of fungous infections in man, Whalen [1] has out-

1. Ryle, J. A.: Anorexia Nervosa, Lancet **2**: 893 (Oct. 17) 1936.

1. Whalen, E. J.: Pathogenic Fungi, Arch. Otolaryng. **24**: 436 (Oct.) 1936.

lined procedures for the simple and rapid examination of material suspected to contain any of the more common types of pathogenic fungi. He provides also a discussion of some of the accepted methods of treatment of these diseases. Obviously, the determination of the identity of the causative fungus is necessary to a correct diagnosis and the successful treatment of the disease.

## Current Comment

### THE NEW BULLETIN

As was noted in a recent issue of THE JOURNAL, the Board of Trustees of the American Medical Association has decided to conclude publication of the *American Medical Association Bulletin* with the issue for December 1936 and to substitute for it a special publication, the first issue of which will appear with THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Jan. 2, 1937. The new publication is to be known as the *Bulletin of the American Medical Association.* It will comprise approximately eight pages in each issue and will be published as a part of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION each week. The new publication is to be devoted to the economic, business, organizational and social aspects of medical practice. Among early features already scheduled are a series of articles describing the headquarters office of the American Medical Association and the work of the various departments; a series of articles on rural medical service in the United States, discussing this service as a whole as well as by individual states; a considerable amount of material describing new forms of medical practice in various parts of the country, and also official announcements and bulletins relative to the work of various committees, councils and official bodies of the Association. One section of the *Bulletin* will be devoted to the Woman's Auxiliary. The *Bulletin* will be edited as a part of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Those desiring to submit manuscripts dealing with the phases of medicine here mentioned may submit them to the *Bulletin.* It is proposed also to feature as a part of this publication a history of the American Medical Association, to be published serially, and the results of much of the work of the Bureau of Medical Economics.

### THE ATLANTIC CITY SESSION—1937

The annual session of the American Medical Association that was held in Atlantic City in 1935 was no doubt the best attended medical meeting ever held anywhere in the world. More than 8,400 physicians registered and the complete registration, including the wives of physicians, exhibitors and others taking part in the session, might well have made the attendance exceed 12,000. Now the Association is scheduled to return to Atlantic City for its annual session in 1937. The Council on Scientific Assembly, the chairmen and the secretaries of the various sections and officers of the Association met in the headquarters office in Chicago recently to consider some of the plans for this meeting. The prospects already indicate a session notable in many different ways. The invited guests include physicians from various foreign countries conspicuous for their contributions to the advancement of medical science. The officers of the various sections have been besieged by applicants for places on the programs. The Scientific Exhibit is also in receipt of great numbers of applications and there will be subsidized exhibits on anesthesia and on fractures. The Council on Scientific Assembly has arranged for several general sessions, which will include clinical demonstrations, graduate lectures, talking motion pictures, and a special general assembly on the subject of the diagnosis and treatment of syphilis. The session will, moreover, be replete with entertainment which only a place like Atlantic City can provide.

### THE CENTENNIAL OF EMORY UNIVERSITY

The November issue of the *Journal of the Medical Association of Georgia* is devoted to the commemoration of the School of Medicine of Emory University and its direct predecessors. The charter for the Atlanta Medical College, which eventually became the Emory University School of Medicine, was granted by the legislature in 1854. After a somewhat stormy career, characteristic of many of the early medical colleges in this country, the entire holdings of the Atlanta Medical College were deeded to Emory University on June 15, 1915. Since that time the medical department has functioned as an integral part of the university. The history as well as the present high-ranking nature of the departments of the School of Medicine, as recorded in this issue of the *Journal of the Medical Association of Georgia,* furnishes stimulating reading and is characteristic of many of the finer medical developments in this country.

### PRODUCTION OF IODINE

Despite the recognition that iodine is indispensable to physiologic well being, that it plays a part in therapeutics and that it finds important use in industry, it is more or less surprising that little of this important element was produced in the United States prior to 1932. This country was dependent on a foreign monopoly for its supply. During the World War attempts were made to make iodine by the extraction of seaweed, but the quantities produced were small and this type of manufacture has been largely discontinued. A recent comment [1] on a report of the Chemical Division of the Department of Commerce indicates that this country has recently assumed a leading position in the production of iodine. During 1935 the sale of this element by producers amounted to 245,700 pounds, and for the past four years it has averaged 276,500 pounds annually. The source of the iodine is salt brine and the waters from oil wells, the most successful projects being located in California. This rapid industrial chemical development has raised the United States from an essentially dependent nation as concerns iodine to the world's second largest producer.

1. J. Indust. & Engin. Chem., News Edition 14: 389 (Oct.) 1936.

# Association News

## RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title Your Health. The first broadcast in the new series, the thirty-second dramatized cooperative broadcast under the title Your Health, was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages, who are members of the American Medical Association and of county and state medical societies, stand ready, day and night, to serve American people in sickness and in health."

The program will go out on the Blue network instead of on the Red network, as originally announced.

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each issue of THE JOURNAL. The topics and speakers for the next three programs are:

December 22. The Gift of Health. Morris Fishbein, M.D.
December 29. Health Assets and Liabilities. W. W. Bauer, M.D.
January 5. "Smog." W. W. Bauer, M.D.

The time of the broadcast is Tuesday afternoon at 4 o'clock central standard time (5 o'clock eastern time, 3 o'clock mountain time, 2 o'clock Pacific time).

# Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

## ALABAMA

**Dr. McLester Appointed Professor of Medicine.**—Dr. James S. McLester, Birmingham, has been named professor of medicine at the University of Alabama School of Medicine. He is an alumnus of the university, class of 1896, and a recent Past President of the American Medical Association. Other promotions include:

Dr. John Howard Ferguson to associate professor of physiology and pharmacology.
Albert S. Harris, Ph.D., assistant professor of physiology and pharmacology.
Dr. Edgar Gilmore Givhan Jr., associate clinical professor of medicine.
Dr. James B. McLester, associate clinical professor of medicine.

## ARIZONA

**Annual Registration Due January 1.**—Every person practicing medicine, surgery or osteopathy in Arizona is required by law to pay annually on or before January 1, to the board of medical examiners, a renewal license fee of $3. Any licentiate who does not renew his license as required above is to be penalized $1 for each day that he practices without a renewal license, not to exceed $50. The board of medical examiners is to revoke the license of any licentiate who fails to renew his license for three successive years.

## CALIFORNIA

**New Mental Hospital Unit.**—The first unit of a new hospital for mental disease at Camarillo, Ventura County, was formally opened October 12. The group of buildings, including the men's unit, was constructed at a cost of $1,380,000. When completed, the institution will have cost $7,000,000. The woman's unit is the next section to be erected. There are now 160 patients in the hospital.

**Society News.**—The Los Angeles County Medical Association has organized a speakers' bureau. At a meeting of the council of the society, November 2, the plan to obtain a copy of the bust of Dr. Joseph P. Widney, owned by the University of Southern California Medical School, was approved; it will be placed in the association's building. A plan to have members of the society use the words "Member—L. A. County Medical Assn." under their names on their office doors was also approved.——Dr. Otto Barkan, San Francisco, discussed "An Operation for Chronic Glaucoma" before the Los Angeles Society of Ophthalmology and Otolaryngology, November 30.——Dr. Edmund W. Butler, San Francisco, addressed the Sacramento Society for Medical Improvement recently on diagnosis and treatment of injuries of the chest and abdomen.——At a meeting of the San Bernardino County Medical Society in San Bernardino, October 6, the program was devoted to presentations by "Pioneers of Medicine in the San Bernardino Valley"; Drs. Thomas M. Blythe, Redlands, licensed in 1888; Marie A. Bennette, San Bernardino, 1886; Joseph A. Champion, Colton, 1895; John N. Baylis, San Bernardino, 1887, and William A. George, Loma Linda, 1911.——A recent meeting of the San Joaquin County Medical Society was addressed, among others, by Dr. Laurence R. Taussig, San Francisco, on "Common Skin Diseases and Their Treatment."——At a meeting of the Tulare County Medical Society in Visalia, September 6, Dr. Theodore L. Althausen, San Francisco, discussed "Recent Advances in Diagnosis and Treatment of Gallbladder Disease."

## COLORADO

**Society News.**—The Northeast Colorado Medical Society was addressed at a meeting in Sterling, November 12, by Drs. George P. Lingenfelter, Charles B. Kingry and Sanford Withers, the state society's cancer team, on "Clinical Diagnosis of Early Cancer." All are from Denver.——At a meeting of the Pueblo County Medical Society, November 17, in Pueblo, Dr. Herman Schwatt, Spivak, discussed "Collapse Therapy in Tuberculosis."

## CONNECTICUT

**Dental Program.**—The state department of health has instituted a dental program in the schools in an experimental area comprising eleven towns, including classroom talks, group instruction, individual examinations and prophylaxis. The work has been completed in three grades in four schools; a fifth is about to be completed, and the work is under way in two more. The program is an extension of the annual well child conferences and summer roundups and is planned to include health talks and the showing of films.

**Personal.**—Dr. Paul H. Brown, health officer of East Haven, has been appointed an epidemiologist in the bureau of communicable diseases, state department of health, on a part time basis; he succeeds Dr. John S. Cunningham, Hartford, who is on leave of absence for one year at the Harvard School of Public Health.——Dr. Wilmar M. Allen, recently appointed director of the Hartford Hospital, was guest of honor at a dinner given by members of the staff, November 5. Dr. Claude W. Munger, Valhalla, N. Y., president of the American Hospital Association, was guest speaker.

**Special Meeting on Pneumonia and Syphilis.**—The Connecticut Public Health Association held a meeting in Waterbury, December 16, to discuss pneumonia and syphilis. A symposium on pneumonia was held in the morning with Drs. Francis G. Blake and Joseph I. Linde, New Haven, and Alfred L. Burgdorf, Hartford, as the speakers, while the symposium on syphilis in the afternoon was presented by Drs. Raymond A. Vonderlehr, assistant surgeon general, U. S. Public Health Service; John L. Rice, health commissioner of New York; Maurice J. Strauss, New Haven; Karl T. Phillips, Putnam, and Henry P. Talbot, Hartford. Other speakers on the program included Drs. Millard Knowlton, Hartford, and Allan J. McLaughlin, U. S. Public Health Service. The session closed with a sound motion picture, "For All Our Sakes."

## DELAWARE

**Pathologic Conferences.**—A series of pathologic conferences opened at the Delaware Academy of Medicine, Wilmington, November 6, on diseases of the kidneys. The second was given December 4 on diseases of the gallbladder. Others in the series, which are of interest to practitioners in all branches of medicine and surgery, are: January 8, carcinoma of the lung; February 5, cardiovascular diseases, and March 5, diseases of the brain.

## DISTRICT OF COLUMBIA

**Dr. Cumming Receives Hartley Medal.**—Dr. Hugh S. Cumming, surgeon general, U. S. Public Health Service, retired, was presented with the Marcellus Hartley Gold Medal "for eminence in the application of science to the public welfare" at the annual meeting of the National Academy of Sciences, November 17, in Chicago. Dr. Cumming, now 67 years old, retired January 31 after sixteen consecutive years as surgeon

general. He had been identified with the service since 1894. He was president of the American Public Health Association in 1931.

**Personal.**—Dr. Earl B. McKinley, dean and professor of bacteriology, George Washington University School of Medicine, has been granted sabbatical leave for the second semester; he will leave in January for the Orient, where he will conduct research on leprosy under the auspices of the American Leprosy Foundation, formerly the Leonard Wood Memorial. Later, traveling around the world, Dr. McKinley will gather material concerning the geographic distribution of disease for inclusion in a volume, to follow one on the geography of disease, entitled "A Cartography of Disease," now in preparation under a grant from the Carnegie Institution of Washington, D. C. Dr. McKinley will return to Washington in September 1937.

**Annual Dinner of Smith-Reed-Russell Society.**—Dr. Charles Franklin Craig, professor of tropical medicine, Tulane University of Louisiana School of Medicine, New Orleans, gave the oration at the annual dinner of the Smith-Reed-Russell Society, George Washington University School of Medicine, Washington, November 17. His subject was "Factors Influencing the Transmission of Malaria." Dr. Ernest Muir, secretary-general of the International Leprosy Association, gave the second lecture in the Smith-Reed-Russell series for 1936 on this occasion, entitled "The Reaction of the Tissues to the Leprosy Organism." The first lecture in the series was delivered by Dr. Richard P. Strong, professor of tropical medicine, Harvard University Medical School, Boston, on "The Parasitic and Bacillary Dysenteries."

## FLORIDA

**Annual Registration Due January 1.**—Every practitioner of medicine and surgery holding a license to practice in Florida is required by law to register annually on or before January 1, with the secretary of the state board of health, and at that time to pay a fee of $1. A licentiate failing to register annually is liable to a fine of not more than $50.

**Society News.**—At a meeting of the DeSoto-Hardee-Highlands County Medical Society in Sebring, October 13, Drs. Spencer A. Folsom and Frank D. Gray, Orlando, discussed cardiac disease and renal denervation, respectively.——Dr. Turner Z. Cason discussed heart block before the Duval County Medical Society, October 6, in Jacksonville.——At a meeting of the Pinellas County Medical Society recently, Dr. Arnold S. Anderson, St. Petersburg, spoke on oxygen therapy.——Dr. Frederick Clifton Moore, Tallahassee, addressed the Suwanee River Medical Association, November 13, on "Indications and Limitations of Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis."

## ILLINOIS

**Society News.**—The Sangamon County Medical Society was addressed in Springfield, December 3, by Dr. Arthur Steindler, Iowa City, on "Low Back Pain: Contribution to Differential Diagnosis," and Hugh J. Graham Jr., J.D., "The Social Security Act."

### Chicago

**Window Exhibit.**—The present exhibit of the Chicago Medical Society in the Marshall Field and Company Annex Building is based on a recent report issued by the state department of health which showed that during the Christmas 1935 holidays the following cases in Illinois were in quarantine:

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|---|---|---|---|
| Smallpox | 25 | Whooping cough | 851 |
| Typhoid | 27 | Scarlet fever | 2,451 |
| Diphtheria | 304 | | |
| | | Total | 3,622 |

The exhibit shows a child quarantined at home with scarlet fever, looking out at other children playing in the snow. Signs in the window say "This child was not protected" and a card by the children outdoors says "These children are protected; are yours?" A poster printed in red and green says "Christmas Gifts for Children Should Include Immunization Against Contagious Diseases."

**Society News.**—Dr. Milton B. Cohen, Cleveland, discussed "The Importance of the Recognition of the Minor Allergies" before the Chicago Medical Society, December 2. Drs. Isidor Harrison Tumpeer and Harry L. Huber spoke on "Allergy in Childhood" and "General Treatment of Allergy" respectively.——At a meeting of the Chicago Surgical Society, December 4, the speakers included Drs. Henry N. Harkins on "Mesenteric Thrombosis" and Harry E. Mock, "Certain Intra-Abdominal Lesions Simulating Malignancy."——Dr. Heinrich Finkelstein, director, Municipal Children's Hospital, Berlin, Germany, addressed the Chicago Laryngological and Otological Society, December 7, on "Mastoiditis in Infants."——Dr. Percy Starr Pelouze, Philadelphia, among others, discussed gonorrhea before the Chicago Urological Society, November 19.——Dr. William P. Healy, New York, addressed the Chicago Gynecological Society, December 18, on "The Use of Radium and X-Rays in Gynecology."

## IOWA

**Society News.**—At a meeting of the Cedar County Medical Society in Tipton, October 16, Drs. Fred M. Smith, Iowa City, discussed treatment of cardiac failure, and Arthur W. Erskine, Cedar Rapids, the cancer problem in Iowa.——Dr. A. Fred Watts, Creston, addressed the Dallas-Guthrie Counties Medical Society, October 15, in Panora, on infant feeding, and Dr. Carl E. Sampson, Creston, eye, ear, nose and throat conditions in general practice. Dr. John H. Peck, Oakdale, discussed the tuberculin reactions in his tests of various patients in the Panora schools at a luncheon meeting of the society and the woman's auxiliary.——The Fremont County Medical Society was addressed in Sidney, October 19, by Drs. Jack V. Treynor on immunization with special reference to scarlet fever and measles, and Karl R. Werndorff, Council Bluffs, different forms of Colles' fracture and the treatment.——Dr. Homer W. Scott, Fort Dodge, addressed the Hamilton County Medical Society in Webster City, October 26, on "Transurethral Prostatic Resection."——At a recent meeting of the Johnson County Medical Society, Oakdale, Dr. Evarts A. Graham, St. Louis, discussed bronchogenic carcinoma.——The Montgomery County Medical Society was recently addressed in Red Oak by Drs. Jay C. Cooper, Villisca, on medical legislation, and Harold C. Bastron, Red Oak, lymphoid tissues of the nasopharynx.——A special scientific meeting of the Des Moines Academy of Medicine and the Polk County Medical Society was addressed, October 13, by Drs. Joseph A. Weinberg, Omaha, on bronchiectasis, and Harold E. Eggers, Omaha, experimental study of cancer.

## KANSAS

**Personal.**—Dr. Francis A. Carmichael, formerly superintendent of the Osawatomie State Hospital, has been appointed chief clinical adviser of the six state hospitals in Missouri; he will make his home in Fulton.——The Brown County Medical Society held a party in honor of Dr. Willard W. Nye, Hiawatha, September 26, celebrating his ninetieth birthday.——Dr. Henry J. Deaver, Sabetha, has been appointed health officer of Nemaha County, succeeding Dr. Frederick S. Deem, Oneida, who resigned to become physician for a CCC camp at Kingman.

**Society News.**—Dr. Peter T. Bohan, Kansas City, among others, addressed the Clay County Medical Society in Clay Center, October 14, on "Uses and Abuses of Internal Medicine."——A symposium on normal delivery was presented before the Coffey County Medical Society in Burlington, October 22, by Drs. John H. Rinehart, Lebo; Albert N. Gray, Burlington; Henry M. Benning, Waverly, and Hubert G. Herring, LeRoy.——At a joint dinner meeting of the Marion, Harvey and McPherson county medical societies, October 28, in Marion, Drs. Leroy A. Calkins, Kansas City, Mo., among others, spoke on "Cancer of the Cervix," and Vincent T. Williams, Kansas City, Mo., "The Abdominal Masquerades of Heart Disease."

## LOUISIANA

**Annual Renewal Due January 1.**—Every practitioner of medicine and surgery holding a certificate to practice in Louisiana is required by law to have his certificate renewed annually, on or before January 1, by the secretary-treasurer of the state board of medical examiners, and at that time to pay a fee of $2. The board may by unanimous vote revoke any certificate not renewed.

**Health at New Orleans.**—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended December 5, indicate that the highest mortality rate (21.3) appeared for New Orleans and that the rate for the group of cities as a whole was 12.2. The mortality rate for New Orleans for the corresponding period last year was 19.4 and for the group of cities, 12.2. The annual rate for eighty-six cities for the forty-nine weeks of 1936 was 12 as against a rate of 11.3 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

## MASSACHUSETTS

**Medal to Dr. Sellards.**—The Laveran Gold Medal of the Société de pathologie exotique of Paris has been conferred on Dr. Andrew W. Sellards, associate professor of tropical medicine, Harvard University Medical School, Boston. Dr. Sellards has been associated with French investigators in the study of yellow fever since 1927. This work has culminated in the development of an effective vaccine, which has now been employed for the protection of more than 20,000 persons. Dr. Sellards first demonstrated that the virus of yellow fever could be preserved in vitro and transported, and in 1928 he brought the first strain from Africa, which was established at once in several laboratories in Europe, London, New York and Boston.

**Changes in the Faculty at Tufts.**—New appointments to the faculty of Tufts College Medical School, Boston, include those of Dr. John L. Jacobs as associate professor of bacteriology, and Drs. William E. Browne and Archibald McK. Fraser as clinical professors of surgery. The following promotions have been made on the faculty:

Dr. James J. Hepburn, professor of surgery to succeed Dr. Horace Binney, now professor emeritus.
Dr. Benjamin Sachs, professor of ophthalmology, succeeding Dr. Edward K. Ellis, now professor emeritus.
Dr. James M. Baty, assistant professor of pediatrics.
Dr. Francis C. McDonald, assistant professor of pediatrics.
Dr. Arthur Berk, assistant professor of psychiatry.
Dr. Otto J. Hermann, clinical professor of surgery.
Harry H. Powers, Ph.D., assistant professor of biochemistry.
Dr. Louis A. O. Goddu, clinical professor of orthopedics.
Dr. Armin Klein, clinical professor of orthopedics.
Dr. John D. Adams, assistant professor of orthopedics.

Dr. Frederick W. Stetson has been made professor emeritus of medicine.

## MICHIGAN

**Memorial to Dr. Harison.**—A bronze tablet placed in the War Memorial Hospital, Sault Ste. Marie, in memory of the late Dr. Beverly Drake Harison, Detroit, contains the following inscription:

BEVERLY DRAKE HARISON
1855-1925
PROMINENT SAULT STE. MARIE PHYSICIAN.
FOREMOST WORKER IN MICHIGAN MEDICAL LEGISLATION.
ONE OF THE FOUNDERS OF THE UPPER PENINSULA MEDICAL SOCIETY.
PRESIDENT OF THE MICHIGAN STATE MEDICAL SOCIETY IN 1904.
SECRETARY OF THE MICHIGAN STATE BOARD OF REGISTRATION IN MEDICINE FOR TWENTY-FOUR YEARS.
ERECTED BY THE MICHIGAN STATE MEDICAL SOCIETY AND THE CHIPPEWA COUNTY MEDICAL SOCIETY.

## NEBRASKA

**Society News.**—At a meeting of the Lancaster County Medical Society, October 20, the speakers were Drs. Edward W. Rowe and John Marshall Neely, Lincoln, on "Primary Malignancy of the Small Intestine" and Czar C. Johnson, Lincoln, on "The Healing Arts," a review of Nebraska medical laws.——The autumn meeting of the Third Councilor District Medical Society was held at Tecumseh, November 20, with the following speakers, all of Omaha: Drs. Charles W. McLaughlin Jr., on "Management of Peripheral Vascular Disease"; Olin J. Cameron, "A Practical Skin Clinic"; Frank Conlin, "Diabetic Complications"; David P. Findley, "Obstetric Analgesia and Anesthesia." Following a dinner Dr. Albert F. Tyler, Omaha, discussed "Treatment of Malignancies of the Face and Mouth" and Mr. M. C. Smith, executive secretary of the Nebraska State Medical Association, field activities of the association.——At a meeting of the Madison Six County Medical Society in Norfolk, November 17, the speakers were Drs. Abram E. Bennett, Omaha, on "Management of Psychoneurotic Patients in General Practice"; Theodore M. Barber, Norfolk, "A Review of Five Years of Musical Therapy at the Norfolk State Hospital," and Richard H. Young, Omaha, "Early Signs and Recent Advancement in the Treatment of Psychiatric States."

## NEW JERSEY

**Personal.**—Dr. Robert A. Kilduffe, Atlantic City, has been appointed editor of the *American Journal of Clinical Pathology* to succeed Dr. Thomas B. Magath, Rochester, Minn., who has served two three-year terms. The journal is the official organ of the American Society of Clinical Pathologists.——Dr. Clarence Garrabrant, Atlantic City, recently celebrated his fiftieth anniversary in the practice of medicine and his eightieth birthday.

**Society of School Physicians.**—The New Jersey Association of School Physicians was organized at a meeting in Newark, November 9, with Dr. Harry B. Silver, Newark, as president and Dr. Aaron H. Horland, Newark, as secretary. Objectives outlined are medical leadership in health education and service in the public schools, standardization of health services throughout the state, improvement in the health service rendered by school physicians, establishment of a special section for school physicians in the state and county societies, and to act as a clearing house for statistical data. The next meeting will be held at Atlantic City in conjunction with the annual meeting of the Medical Society of New Jersey in April 1937.

## NEW YORK

**Annual Registration Due January 1.**—Every practitioner of medicine and surgery in New York is required by law to apply annually, on or before January 1, to the secretary of the board of medical examiners for a certificate of registration, on application forms furnished by him, and to pay at that time a fee of $2. The law authorizes the secretary of the board to permit secretaries of duly incorporated medical societies to act as his representatives, to receive and transmit to him such applications and fees. Practitioners are liable to severe penalties for failing to register and for continuing in practice thereafter.

**Society News.**—At a meeting of the Rensselaer County Medical Society, November 10, the speakers were Drs. Eugene F. Connally, on "Carcinoma of the Colon"; Irwin Johnston, "Diagnosis of Chronic Infections of the Tonsils in Relation to Indications for Operation in Cases of Focal Infection," and Leo S. Weinstein, "Chronic Osteomyelitis." All are from Troy.——Drs. Gordon D. Hoople and Frederick S. Wetherell, Syracuse, addressed the Syracuse Academy of Medicine, December 15, on "Bronchoscopic Diagnosis of Carcinoma of the Lung" and "What Surgery Can Do in Carcinoma of the Lung" respectively.——Dr. James E. King, Buffalo, addressed the Broome County Medical Society, Binghamton, December 8, on "Office Practice of Gynecology."

### New York City

**County Society Lecture Bureau.**—The Medical Society of the County of New York has formed a lecture bureau to provide speakers for lay organizations and is now developing a list of physicians who are willing to give addresses. Members of the committee in charge of the bureau are Drs. Clarence G. Bandler, Peter Irving and Alfred M. Hellman.

**Women Organize for Cancer Control Campaign.**—Representatives from seven Eastern states met in New York November 20 to organize the Women's Field Army, which is being sponsored by the American Society for the Control of Cancer in a campaign of education addressed to the public. "Commanders" from Maine, New Hampshire, Delaware, New York, Pennsylvania, Rhode Island and West Virginia heard addresses by Mrs. Grace Morrison Poole, national adviser to the movement, and Clarence C. Little, Sc.D., director of the American Society for the Control of Cancer. The drive will be continued till March 27, the last week being devoted to enlistment of women as volunteers. After that time the army will go on a permanent basis and will conduct an educational campaign the year round.

**Dr. Northrop Wins Chandler Medal.**—John Howard Northrop, Ph.D., of the Rockefeller Institute for Medical Research, Princeton, N. J., branch, has been awarded the Charles Frederick Chandler Medal of Columbia University for 1936, it was announced December 7, in recognition of fundamental discoveries concerning bacteria, the constitution of protein and the chemistry of digestion. He will deliver the Chandler Lecture in the spring. The medal was founded in 1910 in honor of Professor Chandler, who taught at Columbia and was a pioneer in industrial chemistry. Dr. Northrop, who studied under Professor Chandler, received the degree of doctor of philosophy in 1915 at Columbia and has been associated with the Rockefeller Institute since 1916. During the tercentenary celebration at Harvard University in September he received the honorary degree of doctor of science.

## NORTH CAROLINA

**District Meeting.**—The Eighth District Medical Society met at Leaksville, November 24, with the following speakers: Drs. Roscoe L. Wall, Winston-Salem, on "Cyclopropane-Avertin Anesthesia"; Merle D. Bonner, Jamestown, "Tuberculosis in Children"; Julian M. Ruffin, Durham, "Bloody Diarrhea—Etiology and Treatment"; James F. Marshall, Winston-Salem, "Gynecologic Aspects of Backache," and

Marion Y. Keith, Greensboro, "Pyuria in Infants and Children." Dr. Thurman D. Kitchin, Wake Forest, spoke on medical history and Dr. Charles F. Strosnider, Goldsboro, president of the state society, made an address.

## NORTH DAKOTA

**Annual Registration Due January 1.**—Every practitioner of medicine and surgery holding a license to practice in North Dakota is required by law to register annually on or before January 1, with the secretary-treasurer of the board of medical examiners, and at that time to pay a fee of $5 if a resident of North Dakota, or $2 if a non-resident. A practitioner may not lawfully practice if he has not registered. If he does so his license may be revoked and can be reinstated on the payment of unpaid fees and 50 cents for each month of default.

## OHIO

**Faculty Changes at Ohio State.**—Dr. Charles A. Doan, professor of medicine and medical research, Ohio State University College of Medicine, has been appointed chairman of the department, which has been merged with the medical research department. Among other additions to the faculty are those of Drs. Carl V. Moore as assistant professor of medicine (hematology); George T. Harding III, assistant clinical professor of medicine (psychiatry); Oram C. Woolpert, assistant professor of medicine (infectious diseases); Louis J. Roth, assistant professor of clinical surgery; James K. W. Ferguson and Emil Bozler, Ph.D., assistant professors of physiology, and Lieut. Col. Frank H. Dixon, Medical Corps, U. S. Army, professor of military science.

## PENNSYLVANIA

**Society News.**—Dr. Charles L. Brown, Philadelphia, presented graduate seminars before the Lycoming County Medical Society, Williamsport, December 11, on "Digitalis, Diuretics and Diet in the Management of Cardiac Failure" and "Appraisal of the Therapeutic Measures in the Management of Pneumonia."——Dr. John Huber Wagner, Pittsburgh, addressed the Fayette County Medical Society, Uniontown, December 10, on treatment of fractures.

### Philadelphia

**Fortieth Anniversary of Pediatric Society.**—The Philadelphia Pediatric Society celebrated its fortieth anniversary at a banquet at the Barclay, December 8. The program included the following speakers: Drs. Herbert B. Wilcox, New York, on "Today's Requirements of the Practicing Pediatrician"; John Lovett Morse, Boston, "The Future of Pediatrics"; Albert Graeme Mitchell, Cincinnati, "Timely Comments on Pediatrics," and Henry H. Perlman, "The Philadelphia Pediatric Society, A Retrospect and Introspect."

**Society News.**—Under the auspices of the Laënnec Society of Philadelphia, Dr. Carl B. Semb, Oslo, Norway, gave an address at the Pennsylvania Hospital, December 4, on "Surgical Treatment of Pulmonary Tuberculosis."——The program of the Metabolic Association of Philadelphia, December 4, was devoted to discussion of the high-carbohydrate, low-fat diet in the treatment of diabetes, with the following speakers: Drs. E. Roland Snader Jr., Edward S. Dillon, Howard W. Schaffer and Joseph T. Beardwood Jr. and Miss Henrietta Pribnow.——Dr. Arthur Bruce Gill delivered the annual oration of the Philadelphia Academy of Surgery, December 7, on "The Surgeon's Hands."

**State Society Honors Dr. Hamill.**—At the annual meeting of the Medical Society of the State of Pennsylvania in Pittsburgh in October, the house of delegates of the society on the recommendation of the board of trustees presented to Dr. Samuel McC. Hamill, Philadelphia, an illuminated manuscript in recognition of his service as chairman of the State Emergency Child Health Committee during the past three years. Dr. Hamill, who is 72 years old, graduated from the University of Pennsylvania School of Medicine in 1888 and has practiced in Philadelphia since 1890. He was professor of diseases of children at the old Philadelphia Polyclinic and College for Graduates in Medicine from 1901 to 1919 and at the University of Pennsylvania Graduate School of Medicine, 1919-1920. He has been president of the American Pediatric Society (1913-1914); the American Child Health Association (1931-1935); the American Academy of Pediatrics (1932) and the American Association for the Study and Prevention of Infant Mortality (1915-1916). He was the first chairman of the section on pediatrics of the Medical Society of the State of Pennsylvania and was chairman of the Section on Diseases of Children of the American Medical Association in 1911. In 1930 he served as chairman of Section I on Medical Service of President Hoover's White House Conference on Child Health and Protection and chairman of the follow-up committee on that section.

## RHODE ISLAND

**Women's Cancer Organization.**—Dr. George T. Pack, New York, was the guest speaker at a meeting in Providence November 16 launching the Rhode Island division of the "Women's Field Army for the Control of Cancer," a national campaign under the auspices of the American Society for the Control of Cancer. The organization will carry on a campaign for early diagnosis and treatment and for public support of the educational work.

**Society News.**—Drs. James P. O'Hare, Boston, and Vincent J. Oddo, Providence, addressed the Providence Medical Association, December 7, on "Interesting Problems in Hypertension and Bright's Disease" and "Transurethral Resection of the Prostate Gland—A Conservative Evaluation" respectively. Drs. William T. Green, Boston, and Franklin P. Lowry, Newton, addressed the association, November 2, on "The Practical Use of Physical Therapy."

## TEXAS

**Society News.**—The Texas Club of Internal Medicine held a meeting at the University of Michigan Medical School, Ann Arbor, October 8-10, with a program of lectures, ward rounds and visits to the laboratories of metabolism and electrocardiography. Dr. Lee Rice, San Antonio, is president of the club.——Drs. George W. McCoy, Washington, D. C., and Royall M. Calder, San Antonio, addressed the Bexar County Medical Society, San Antonio, October 8, on "Etiology, Incidence and Treatment of Undulant Fever" and "Local Experiences in the Diagnosis and Treatment of Undulant Fever" respectively.——Drs. James H. Shane and Sim Driver, Dallas, addressed the Cooke County Medical Society, Gainesville, October 12, on "Care of the Prostatic Patient" and "Fractures of the Neck of the Femur" respectively.——Dr. Henry Grady Bevil, Beaumont, addressed the Jefferson County Medical Society, Beaumont, November 9, on "Use of Liver Treatment in Obscure Deficiency Diseases."——Dr. William L. Parker, Wichita Falls, was elected president of the Texas Association of Obstetricians and Gynecologists at a meeting in Dallas November 1.

## VIRGINIA

**Personal.**—Dr. Leta J. White, Petersburg, was elected chairman of the Women Physicians of the Southern Medical Association at the annual meeting in Baltimore in November.——Dr. Porter P. Vinson, Rochester, Minn., has been appointed professor and head of the department of bronchoscopy, esophagoscopy and gastroscopy at the Medical College of Virginia, Richmond. He will also be in charge of chronic pulmonary diseases at Memorial Hospital.

**University News.**—The third annual graduate course in ophthalmology and otolaryngology was held at the University of Virginia Department of Medicine, October 27-30. Among the guest lecturers were Drs. Harry S. Gradle, Chicago; Bernard Samuels, New York; Gabriel Tucker, Philadelphia, and John R. Richardson, Boston.——Dr. Theodore L. Squier, Milwaukee, addressed the University of Virginia Medical Society, November 16, on "Bone Marrow Insufficiency with Especial Reference to Granulocytopenia."

**Society News.**—Dr. Charles H. Patterson, Lynchburg, addressed the Lynchburg Academy of Medicine, October 5, on pruritus.——At a meeting of the Roanoke Academy of Medicine, October 5, Dr. Littleton Davis, among others, spoke on "Nonsurgical Pyloric Stenosis."——The Dickenson-Buchanan Counties Medical Society was reorganized at a meeting at Haysi, recently, with Drs. Alexander S. Richardson, Grundy, as president, and Tivis C. Sutherland, Haysi, secretary.——At the quarterly meeting of the Southside Virginia Medical Society in Petersburg, December 8, the speakers were Drs. Martillus H. Todd, Norfolk, on "Traumatic Surgery"; Robert Mazet Jr., Norfolk, "Development and Use of Traction in the Treatment of Fractures"; W. Ambrose McGee, Richmond, "Allergy of the Upper Respiratory Tract"; Wright Clarkson, Petersburg, "Uses and Abuses of Radium in Gynecology," and Eugene L. Lowenberg, Norfolk, "Treatment of Varicose Veins by Multiple Ligations and Controlled Injections."

## WASHINGTON

**University News.**—A new $200,000 infirmary for the health service of the University of Washington, Seattle, has been opened recently, with improved facilities for outpatient service and full hospital equipment for care of inpatients, except surgery.

## GENERAL

**Society for Clinical Research.**—Dr. David P. Barr, St. Louis, was elected president of the Central Society for Clinical Research at its ninth annual meeting in Chicago, November 6-7, and Dr. Lawrence D. Thompson, St. Louis, was reelected secretary. Speakers included:

Drs. J. Arnold Bargen and Lorin D. Whittaker, Rochester, Minn., Studies of the Function of the Small Intestine.
Dr. Robert A. Kehoe, Cincinnati, The Alimentary Elimination of Normally Ingested Lead.
Dr. Henry N. Harkins, Chicago, Plasma Hemorrhage.
Dr. Howard L. Alt, Chicago, Experimental Iron Deficiency.
Dr. Elmer L. DeGowin, Iowa City, Clinical Study of Serious Complications from Blood Transfusion.

**Another New Journal—"Growth."**—Announcement has been made of the forthcoming publication of a scientific journal to be called *Growth*, for "studies of the basic factors, processes and functions concerned in growth as a fundamental property of nature." It will be published by contributors and subscribers "as a nonprofit cooperative medium for the integration of growth expressions through the basic sciences," according to the announcement. The managing editor is Prof. Norman J. Berrill, D.Sc., department of zoology, McGill University, Montreal. The editorial board is representative of various branches of scientific work. Publication will begin in January 1937 as a series of numbered fasciculi at irregular intervals, one volume a year.

**Congress of Railway Surgeons.**—Dr. William A. McMillan, Charleston, W. Va., was chosen president of the American Association of Railway Surgeons at the annual meeting in Chicago, November 5-7; he succeeded Dr. Don Deal, Springfield, Ill. Vice presidents are Drs. Mathew A. Tinley, Council Bluffs, Iowa; Herman A. Brennecke, Aurora, Ill., and Victor H. Horning, Chicago; Dr. Theodore L. Hansen, Chicago, was reelected treasurer, and Dr. Daniel B. Moss, Chicago, reelected secretary. The next annual meeting will be held at the Palmer House, Chicago, Sept. 20-22, 1937. The speakers included:

Dr. Vernon C. David, Chicago, Obstruction of the Bowel Due to Lesions of the Rectum and Colon.
Dr. Philip H. Kreuscher, Chicago, The Surgical Treatment of Arthritis.
Dr. Robert D. Schrock, Omaha, Early Pathology in Bone Tumors.
Dr. Brennecke, Treatment of Electrocuted Persons.

**Congress of Physical Therapy, X-Ray and Radium.**—The second cruise of the Latin-American Congress of Physical Therapy, X-Ray and Radium will take place March 9-28, to Guatemala City, Guatemala. One boat will sail from Philadelphia March 9 and another from New Orleans March 10. The congress has been arranged for the week of the inauguration of the president of Guatemala and visitors will participate in the festivities at that time. There will be three scientific sessions, Tuesday morning and afternoon, March 16, and Saturday morning, March 20, at the National University School of Medicine, the intervening time to be spent in a trip to the interior of Guatemala. Physicians who wish to attend should apply to Dr. Norman E. Titus, 730 Fifth Avenue, New York, president of the congress, or to Dr. Cassius Lopez de Victoria, 1013 Lexington Avenue, executive director.

**Society for Study of Arthritis.**—The eighth annual meeting of the American Society for the Study of Arthritis was held in New York at the Waldorf-Astoria, December 3-5. The mornings were devoted to round table discussions and the afternoons to presentation of the following papers:

Dr. Benjamin H. Huggins, Evanston, Ill., Nonarthritic Problems in Differential Diagnosis.
Dr. Raymond L. Jeffery, Seattle, Résumé of Cases Treated with Complement-Fixing Antigens.
Dr. Carl R. Comstock, Saratoga Springs, Regimen for Arthritis as Employed at Saratoga Springs.
Dr. Charles Murray Gratz, New York, Fascial Adhesions.
Dr. Henry Warren Crowe, London, England, Examples of Radiography in the Diagnosis and Control of Treatment of Arthritis.
Dr. Lazaros G. Hadjopoulos, New York, Direct and Intermediate Pathways for Streptococcic Invasion.

The society held an open meeting at the New York Academy of Medicine Thursday evening, December 3, with the following speakers: Drs. Crowe, on "Differential Sedimentation Test in Arthritis"; Ralph R. Mellon, Pittsburgh, "New Studies in the Dissociation of Hemolytic Streptococci," and Laurence H. Mayers, Chicago, "Drugs for Arthritis: A New One Each Week for Three Thousand Years." Dr. Reginald Burbank, New York, was reelected president; Dr. Hadjopoulos, New York, was elected vice president, and Dr. Charles H. McEnerney, Washington, D. C., reelected secretary.

**Support Requested for Army Medical Library.**—The Medical Library Association at its recent annual meeting adopted a resolution urging Congress to appropriate funds for the maintenance and development of the Army Medical Library. The resolution asked specifically that funds be appropriated for current medical books and periodicals; for the purchase of back publications lost during years when the appropriation was inadequate; to make the collection and its *Index-Catalogue* as complete as possible, and to defray the cost of printing regularly each year not less than one volume of the *Index-Catalogue*. The association pointed out that the value and completeness of the *Index-Catalogue* depend on the completeness of the files of medical publications in the library and that in recent years the appropriation to the library has been wholly inadequate to provide for acquisition of current publications for use throughout the country and for inclusion in the index.

**Society News.**—At the seventeenth annual meeting of the Association of Surgeons of the Chesapeake and Ohio Railway at White Sulphur Springs, W. Va., November 6-7, speakers included Drs. Walter R. Griess, Cincinnati, on "Treatment of Gastric Ulcer with Special Reference to the Use of Emetine Hydrochloride"; Martillus H. Todd, Norfolk, Va., "Treatment of Pott's Fracture"; Claude C. Coleman, Richmond, Va., "Treatment of Acute Head Injuries with Special Reference to the Cases That Require Operation," and Francis A. Malmstone, Griffith, Ind., "Treatment of Diabetes Mellitus with Protamine Insulin." Dr. Halstead S. Hedges, Charlottesville, Va., was elected president.——Dr. Leroy S. Peters, Albuquerque, N. M., was chosen president-elect of the Southwestern Medical Association at its annual convention in El Paso, November 21. Dr. Chester R. Swackhamer, Superior, Ariz., was installed as president; Drs. Howell S. Randolph, Phoenix, and John W. Cathcart, El Paso, were elected vice presidents and Dr. Orville E. Egbert, El Paso, was elected secretary. The 1937 meeting will be in Phoenix. Dr. William L. Brown, El Paso, was made honorary life president of the association at this meeting.——The Central States Dermatological Association held its annual meeting in Cleveland, December 5. This association is made up of the dermatologic societies of Rochester, Buffalo, Pittsburgh, Cincinnati, Detroit and Cleveland.——The American Association on Mental Deficiency will hold its annual meeting in Atlantic City May 5-8, 1937. Dr. E. Arthur Whitney, Elwyn, Pa., is secretary.——The American Academy of Orthopedic Surgeons will hold its fifth annual convention in Cleveland, January 11-13, at the Hotel Cleveland.

**Arrests Made in the "Eyeswindling Racket."**—The U. S. Post Office Department has made the following arrests in its investigation of the "eyeswindling racket," also known as the "glimmer racket," which has been carried on throughout the country for several years:

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| Boyce Bateman | Lawrence B. Holtkamp |
| Harold N. Baxley | Lewis Levy |
| Samuel Birnstein | William Henry Londergon Jr. |
| Samuel Bluestine | Frank Mackett Jr. |
| Iddien Reese Conner | J. C. Murphy |
| Herbert C. Crangle | Edward Robinson, alias Eddie A. |
| Lewis Fenburg | William Shapiro |
| Samuel F. Freedman | Jerry Theeman |
| John Gray | Elliott George Wilkinson |
| William E. Hanecy | Mathew O. Wilkinson |
| Harry Herman Holtkamp | Curtis J. Yeager |

All have been charged with violating either federal or state laws in the operation of the racket. THE JOURNAL published a news item concerning Birnstein, November 14, page 1643. Bluestine was sentenced to one year in jail. Gray was sentenced to ten years on the eyeswindling scheme and fifteen years for attempted murder, in the penitentiary at Huntsville, Texas. Murphy received a sentence of five years in the Huntsville prison. Crangle was arrested November 7 and removed to Norfolk, Va., where the indictment is pending. Londergon, said to be a resident of Chicago, was arrested in Carroll, Iowa, November 21, and sentenced at Montezuma, November 30, to serve seven years in the penitentiary at Fort Madison. Robinson also was arrested at Carroll, November 21, and held for removal to Asheville, N. C., where he is wanted on a federal charge in connection with a swindle in that state. In addition to the eyeswindling charge placed against these "fake eye specialists," the government has also accused them of using the mails to defraud. Three indictments have been returned against Mackett and others. The swindlers sent to Mackett the checks which they obtained from their victims and he deposited them in banks for collection, remitting the proceeds, less 10 per cent commission, to the swindlers. Mackett is an attorney in Milwaukee and in addition operates what is known as the Police and Sheriff's Association of America. In the latter operation he sends agents throughout the country to call on police chiefs and sheriffs and induce them to join his association, giving them free accident policies and in return procuring from the chiefs of police and sheriffs letters which are used in the solicitation of advertisements from the banks and business houses. Hanecy, indicted with Mackett in the collection of the checks, is also a lawyer. The postoffice department states that more than 100 men have been engaged in the "glimmer racket."

## FOREIGN

**Society News.**—The Norwegian Medical Association is celebrating its fiftieth anniversary this year. There are now 2,100 physicians in Norway, compared with about 600 in 1885. Dr. Jorgen H. Berner is secretary general of the association and joint editor of its journal.

**Research Council on Rheumatism.**—A British Empire Rheumatism Council was recently organized at a meeting at the Royal Society of Medicine in London with Lord Horder as chairman. The duke of Gloucester accepted an invitation to be president of the council; Dr. William S. C. Copeman was appointed honorary medical secretary and Sir Frank Fox organizing secretary. The object of the council is to organize research throughout the empire into the causes and means of treatment of rheumatism. It was pointed out that in Great Britain this disease is responsible for one sixth of the payments necessary under the national insurance act.

# Government Services

### Government Positions Open

The U. S. Civil Service announces open competitive examinations for three positions: senior medical officer in psychiatry (woman) at St. Elizabeth's Hospital, Washington, D. C., at $4,600 a year; junior medical officer (intern), $2,000 a year, and junior medical officer (psychiatric resident), $2,000 a year. Competitors will not be required to report for examinations at any place but will be rated on their education and experience. Applications must be on file not later than January 7 if from Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington or Wyoming and not later than January 4 from all other states. Application forms and information may be obtained from the board of civil service examiners at any first class postoffice, from the U. S. Civil Service Commission, Washington, D. C., or from the U. S. Civil Service district office in Atlanta, Boston, Chicago, Cincinnati, Denver, New Orleans, New York, Philadelphia, Seattle, St. Louis, St. Paul, San Francisco, Honolulu, Balboa Heights, C. Z., or San Juan, Puerto Rico.

### Conference on Venereal Disease Control

A conference on venereal disease control work will be held at the Department of Commerce Auditorium, Washington, D. C., December 28-30. Dr. Thomas Parran, surgeon general, U. S. Public Health Service, will discuss the general purpose of the conference in his address of welcome Monday morning. Other speakers at the general sessions will include:

Dr. Raymond A. Vonderlehr, assistant surgeon general, division of venereal diseases, U. S. Public Health Service, Recent Extension of Venereal Disease Control Work Through the Provisions of the Social Security Act.

Dr. Edward S. Godfrey Jr., state health commissioner of New York, The Venereal Disease Control Program in New York State.

Dr. Earle G. Brown, Topeka, secretary, Kansas State Board of Health, The Venereal Disease Control Program in Kansas.

Dr. C. Walter Clarke, director, bureau of social hygiene, New York City Department of Health, A Typical Municipal Venereal Disease Control Program.

Dr. Percy S. Pelouze, assistant professor of urology, University of Pennsylvania School of Medicine, Philadelphia, The Modern Clinical Management of Gonorrhea.

Dr. John H. Stokes, professor of dermatology and syphilology at Pennsylvania, Clinical Problems in Syphilis Control Today.

Dr. Henry H. Hazen, professor of dermatology, Howard University College of Medicine, Washington, D. C., The Serodiagnosis of Syphilis.

Paul de Kruif, Ph.D., Holland, Mich., Public Cooperation in the Control of Syphilis.

Dr. Alan M. Chesney, dean, Johns Hopkins University School of Medicine, Baltimore, Present Research Needs in the Control of Syphilis.

## CORRECTION

**Visualization of the Amount of Residual Urine.**—In the article by Dr. Edwin Beer in THE JOURNAL, December 5, page 1886, the reference in the second column to the illustrations should have been to figures 1 to 6. Under figure 4 the legend should read "Excretory cystogram after voiding, showing stone outside the bladder shadow in the ureter meatus." Under figure 5 the legend should read "Excretory cystogram before voiding, showing intrusion of large intravesical prostate." This was introduced to compare with figure 6, in which after voiding there was practically no residual urine, as evidenced in the urogram.

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

Nov. 7, 1936.

### The Health of London

According to the annual report of the county medical officer of health for London, the infant mortality rate last year was the lowest on record, 58 per thousand live births. There has been a noteworthy reduction in the number of deaths from street accidents, which have fallen from 752 in 1934 to 531 in 1935. Details are given of the migration of population. Until 1881 there was a definite inflow into the "county of London" (the large area, including the suburbs controlled by the London County Council) but since that year the flow has been outward. This is due to the desire, which developed when London became so big, of business men to live in the country and come to town daily for their work. The maximum migration "in" was in the decennium 1841-1851, when it was 251,185. The maximum migration "out" was in 1901-1911, when it was 523,091. During 1921-1931 the migration "out" was 324,261, and in the same period there was an increase of 811,261 in the population of the "outer ring" of London. The figures for the administrative county show the net result of immigration and emigration and disclose that even when the net migration "out" was large there was migration "in" at certain ages, especially of girls between 15 and 20 and of young men between 20 and 25. The maternal mortality for 1935 was 2.58 per thousand live births, the lowest on record. The death rate for tuberculosis was 0.68 per thousand, also the lowest on record.

### The Decline of Population

The decline of population, which has been shown by statisticians to be imminent, is beginning to attract public attention. A population investigation committee has been set up, of which Professor Carr-Saunders (statistician) is the chairman and various societies are represented by well known men—the British College of Obstetrics and Gynecology by Mr. Eardley Holland, the Medical Research Council by Dr. L. S. Penrose, the Royal Economic Society by H. D. Henderson, the British Population Society by Sir Charles Close, F.R.S., the Eugenics Society by Lord Horder and Julian Huxley, the Society of Medical Officers of Health by Dr. Stella Churchill. Other members are Prof. James Young (gynecologist) and Prof. Lancelot Hogben and Dr. R. R. Kuczynski. The two last named are statisticians who have made a special study of population. The program of the committee is not to suggest lines of action but to examine the present situation and the circumstances that have led to it. Since a national problem of the greatest importance has been created by the decline of the birth rate, anxiety about the future will soon be general. It is also likely that there will shortly be inquiries as to what can be done to avert a serious fall in numbers. But it is held that, before useful suggestions can be made, much fuller examination of the position is necessary. About many important aspects of the fall in the birth rate little is known. The committee, which has obtained the services as secretary of Mr. D. V. Glass, a well known writer on population, hopes soon to be able to expand its own organization for research and at the same time arrange for the collection of material, to stimulate investigation by other bodies which engage in research, and to facilitate cooperation and consultation between specialists whose work touches various aspects of the subject.

An organization called the League of National Life is opposed to contraception. It largely represents religious opinion. At a recent meeting Dr. F. J. McCann (gynecologist), who pre-

sided, said that the continued fall in the death rate was concealing the impending decline of population. More children survived and the mean expectancy of life had been raised from fifteen to twenty years since the middle of the last century. The expectancy of life was now 59 years. Already the diminution in the number of young people was being felt in industry. It was computed that in twenty-five years children of 16 would be fewer by a third and that adults from 65 to 74 would be more numerous by a third. The increasing number of old people who had ceased to be producers would impose a burden on the young, who would be still more inclined to shirk the responsibilities of parenthood. As to the causes of the decline, the higher standard of living had brought with it a desire for luxury and amusement which had reacted unfavorably on family life. The attitude of women toward motherhood had changed since they began to claim a larger share in public life. The increase of female employment was another factor. The rapidly spreading use of contraception was exerting its influence more and more in all classes of society. He advocated the closure of the recently established birth control clinics. A resolution was passed "that in the interests of national prosperity and security the government be urged to formulate and carry out a national policy to meet the peril of declining population."

### The Transport and Storage of Foodstuffs

Much research under government auspices has recently been done on the transport and storage of foodstuffs. The report for 1935 of the food investigation board of the Department of Scientific and Industrial Research, which has just been published, states that in regard to the gas storage of fruit and chilled meat and the brine freezing of fish, general solutions have been found. The right proportion of carbon dioxide to be used in the atmosphere has been ascertained. A good deal of progress has been made in connection with the manufacture of bacon. A survey is being made on the cold storage of herrings. The problem of fruit and vegetables is a different one. The object is to control the living processes during handling and storage, so that after a given time the requirements of the consumer may be satisfied. At present we are far from being able to store raw fruits and vegetables from one season to another, while the qualities after such storage as is common in commerce are in general inferior to the material at its best. The apple, the orange and the banana account for three fourths of the consumption of raw fruit. Fundamental research on the two latter cannot be carried out in this country; it must be done where the fruit is grown. Research is being done in various parts of the empire; on the orange in Australia and South Africa, on the banana in Australia and the West Indies. The storage of tomatoes is being investigated but is hampered by the fact that little is known of the physiology of this fruit.

### The Use of Analgesics by Midwives

As more than half the labors in this country are attended by midwives, it has been felt that they should have some method of relieving pain. Mr. L. C. Rivett worked out a method of chloroform analgesia by means of 20 minim (1.25 cc.) capsules of chloroform to be crushed and administered to the patient during severe pain. But, as stated in a previous letter (THE JOURNAL, March 28, p. 1104) a committee appointed by the British College of Obstetrics and Gynecology to investigate the question whether there is any safe method which can be entrusted to the midwife in the absence of a physician rejected this method. The committee came to the conclusion that nitrous oxide and air might be safely administered by the Minnitt or similar apparatus, provided recent examination by a physician revealed no contraindication. Its use should be restricted to midwives who have been specially trained. The Central Midwives Board, after consultation with the College of Obstetrics and Gynecology, has drawn up the following rules for such administration: 1. The midwife must have received instruction in obstetric analgesia at an approved institution, which she has satisfied as to her competence. 2. She must have a certificate in writing from a physician who has examined the patient within a month of labor that the latter is in a fit condition for gas and air administration. 3. There must be in the room at the time of administration, in addition to the midwife, one other person who is either a midwife, a state-registered nurse, a senior medical student or a pupil midwife.

For domiciliary administration there is the difficulty of expense. In a letter to the *Times*, Mrs. Baldwin (the wife of the prime minister), who has headed a movement to raise funds to provide analgesia for women who cannot afford to employ a physician, points out that the recent midwives act should greatly assist in the provision of analgesia for all women, rich or poor. Light portable gas and air machines costing from $42 to $63 will soon be available. Arrangements for the delivery and collection of gas cylinders for a charge of 84 cents are being made by a well known firm. The average cost of the gas administered in a series of cases was found to be 50 cents. The fact that such analgesia may have drawbacks, which in some cases may outweigh the advantages, is not taken into account.

## PARIS

*(From Our Regular Correspondent)*

Nov. 7, 1936.

### Social Insurance Questions

A correspondent of the *Concours médical* (a journal in which considerable space is devoted to queries and answers to social insurance questions) asks, with regard to the legal requirement of a physician's notice of having treated an insured person within three days after the first visit, whether this is required only at the onset of an illness or whether such notice must be sent after every call, and, in cases seen only at intervals of two to three weeks, whether a notice must be sent after each visit.

The answer was that such notification must be made only once and within three days after the first call. As to chronic cases, seen only every few weeks, the question presents as to whether the insured person has already received indemnity for six months. If such is the case, the insured person must arrange to have his invalidity extended for another six months, after having been apparently "cured" for an interval of two months. This last requirement has been the subject of much litigation, but according to recent decisions the patient can have his indemnity prolonged without being obliged to rest without compensation for two months.

A correspondent of the *Concours médical* (October 11) states that a female worker who was insured was refused indemnity for medical care to her child because the husband was not insured; hence their children could not benefit by the fact that the mother alone was insured. The answer to this query was that there had been no change in the older law as to result of the passage of the modified law in 1935. The term "insured" is employed irrespective of sex; hence it applies to the wife as well as to the husband. The mother is entitled to recompense for the care of her child even though the father is not insured; hence the claim is a just one and the caisse, or disbursing office, of the social insurance organization should be compelled to pay for the child's medical care.

Another correspondent in the October 18 issue asks whether a male worker who receives a pension of 3,900 francs per annum (less than $200) as the result of invalidity incapacitating him to the extent of two thirds of his working capacity has the right to work a certain number of hours per day or week, corresponding to the remaining third of his former ability to work. The insured has a severe form of diabetes resulting in a two-thirds invalidity. He now works five hours a day instead

of eight as formerly, because the diabetes is in a relatively quiescent stage. The answer to this query was that an insured worker who receives an invalidity pension because of being two-thirds incapacitated has the right to work to the extent (one third) which his health permits. However, the recent law (1935) states that the pension can be suspended whenever the insured has other means equal to the salary received before the invalidity pension was granted. Furthermore, the invalidity pension can be stopped if the ability to work exceeds 50 per cent; hence if the insured person in question does not receive as the result of his two-third incapacity pension and his salary in working a sum equal to that received before being granted the invalidity pension, he can continue to work and receive both his pension and his additional salary.

In the September 27 *Concours médical* a correspondent asks the following question: He wishes to employ a husband and wife as butler and cook respectively. They have an income from property owned by them. Their annual wages at the home of the correspondent of the *Concours médical* are about 10,000 francs. The couple do not wish to join the social insurance, and the question arises whether they have the right to refuse and is the employer liable to a fine, if, as is obligatory in France, he does not pay his share (half) of the monthly premium. The answer to the query was as follows: The revised social insurance law, which went into effect August 21, makes it obligatory for every salaried male or female worker of French nationality who earns 21,000 francs (about $1,500 before the recent devaluation) to be insured. For workers who have a minimum of one dependent child, this amount is raised to 25,000 francs. If a worker has an income that is independent of the remuneration received for his services, the obligation to be insured is not changed by such additional income. Hence the correspondent was advised not to neglect to notify the social insurance authorities of having employed two persons receiving together a salary of 10,000 francs annually. If the employer fails to do so, the employees can claim from him, in case of sickness, a sum equal to that which should have been paid by both parties by the social insurance fund.

### A Sidelight on Social Insurance

In the September 20 *Concours médical,* a practitioner asks whether an individual insured under the social insurance law is compelled to submit to an examination by a medical inspector of the caisse, or disbursing office, of the state insurance organization, in the absence of the attending physician. In the reply, the paragraph in the law as modified in October 1935 is cited to the effect that every one insured against illness is obliged to submit to examinations by medical inspectors, a refusal to comply with this requirement resulting in the suspension of all indemnities. Hence the attending physician ought not to advise the insured person to refuse to submit to such an examination, and the insured person cannot insist on the presence of the attending physician. Should the insured person wish to have his physician present, the fee of the latter must be paid by the insured person without any prospect of being recompensed by the insurance caisse, or bureau. The only exception to the necessity of submission to an examination by the medical inspector in the absence of the attending physician is when an inspector interferes with the relation of patient and medical attendant, criticizes the treatment or makes a diagnosis in the presence of the patient which does not conform with that of the attending physician. It is evident that the preceding is one of the weak points of state medicine, because it destroys the confidence between the patient and his physician, which is indispensable to success in treatment. An insured person who is obliged to cease work or travel to a neighboring city for an examination by a medical inspector ought to be recompensed for all expenses, but this question still remains to be decided, according to the *Concours médical.*

### Fees Received for Social Insurance Cases

If an insured worker wishes to be treated at a hospital that has no contract with the caisses, or disbursing offices, of the social insurance organization, he will be indemnified only at the same rate that is allowed for care at home or in a public hospital. If, however, a private hospital has made a contract to care for the insured, the caisses will pay an agreed sum per diem to the hospital. The amount granted under these circumstances is about equal to that allowed for public hospitals. This per diem allowance is about 42 francs ($2) and does not include fees for operations, for which such a relatively low allowance is made that, in large cities, vigorous protests have been made to the insurance authorities by the surgical societies.

With regard to fees for the attending staff of public hospitals, by the caisses or disbursing bureaus, the maximum allowed for physicians is 4 francs (20 cents) a day and, for surgeons, fees varying from 6 to 24 francs ($1.25) will be granted, depending on the type of operation as previously agreed on in accordance with a fee table. July 29 the Syndicat, or Union, of French Surgeons passed resolutions protesting against forcing insured workers to enter public hospitals, because they would be obliged, should they wish to enter a noncontract private hospital, to pay the difference between the per diem charge allowed by the caisses for a contract private or public hospital and the charges of a noncontract hospital. The same was true for surgical fees; hence the Surgical Union demanded that this injustice be corrected by permitting an insured worker to enter a noncontract private hospital and to be indemnified in full for the fees paid to these hospitals and that the surgeons be reimbursed according to an agreed on fee table. Thus the free choice of medical attendant as the French law provides would not be violated and the insured would be considered as such and not as paupers.

### Social Insurance Law Does Not Permit Choice of Hospital

An important decision was rendered in May by the supreme court to the effect that an insured worker under the social insurance law of 1930 can enter only a private or public hospital that has a contract with the caisses, or local disbursement agencies, of the social insurance organization. If the insured worker chooses a hospital or sanatorium that does not have such a contract, he will receive an indemnity equal only to that which would be granted for a stay in the individual's own domicile. This decision follows considerable litigation during the past two years. The courts of appeal of two departments in 1934 and 1935 and the supreme council of the social insurance organization in August 1935 decided that the insured had the right to choose the institution he wished to enter, whether or not it had a contract with the insurance authorities. An appeal was made from this decision and the supreme court has just overruled the judgment of the lower court, so that, in the future, the free choice of a hospital no longer exists. This decision will work a hardship for many institutions that are unwilling to take care of social insurance cases at the comparatively low rates allowed by the caisses or disbursing agencies.

### Maud Slye Lectures in Paris

Miss Maud Slye of the University of Chicago, whose research work on the rôle of heredity in cancer has given her an international reputation, lectured on the results of her studies on this subject in the amphitheater of the department of pathology in the medical school (Faculté de médecine) of the University of Paris, October 5.

### Lecture by Dr. Walter M. Simpson

The value of pyretotherapy in the treatment of syphilis and gonorrhea was the subject of a lecture given by Dr. Walter M. Simpson of Dayton, Ohio, at the Alfred Fournier Institute, June 26.

## BERLIN

*(From Our Regular Correspondent)*

Oct. 19, 1936.

### The Treatment of Early Syphilis

In virtually all countries the number of cases of early syphilis has considerably declined during the past fifteen years. But the decline has almost universally not taken place at the rate which might have been anticipated in view of modern procedures for the detection and eradication of syphilis. This fact may perhaps be attributed to the lack of a uniform guiding principle in the application of antisyphilitic methods as well as to certain diagnostic difficulties. Not only do fundamental therapeutic principles undergo a constant development from country to country; within one country their perfection depends on the personsal experience and method of presentation of the individual clinician. To establish greater international coordination of procedure it should first of all be proved that certain guiding principles of therapy conduce to unmistakably superior results. The Section on Hygiene of the League of Nations with this in mind undertook to assemble material from all the important clinics of Germany, Denmark, France, Great Britain and the United States. This material was then studied and evaluated by Professor Martenstein of Dresden.

Of 25,632 cases thus collected, 15,333 could be designated cases of early syphilis. There is an individual standardized record card for each case and in addition each hospital director has appended the answers to a general uniform questionnaire with reference to the therapeutic procedures followed. This material, collected from the best organized and best directed institutions of the respective countries, demonstrated on sifting amazing defects in the practical carrying out of diagnosis and treatment. Consequently a number of fresh syphilis cases, some 13 per cent of the collected cases of fresh syphilis in which the diagnostic and serologic control procedures deviated from recognized methods of the present day, had to be placed in a separate category. In 1,968 cases recorded as seronegative, primary syphilis, positive demonstration of the spirochete was lacking for around 19 per cent despite the fact that such a demonstration constitutes the sole possible proof that the disturbance is of a syphilitic character. In 324 primary cases no attempt to elicit a seroreaction had been made, and in 53 per cent of these cases the spirochete was either not demonstrable or else no attempts had been made to establish its presence. Of a further 3,153 cases recorded as seropositive primary syphilis only 53 per cent were examined for the spirochete, and in only 43.5 per cent of all this number was proof of the presence of the causative agent adduced.

*Percentage of Cases in Which at Least One Lumbar Puncture Was Done*

| Country | Cases of Discontinuous Treatment in Which Lumbar Puncture Was Performed, per Cent | Cases of Continuous Treatment in Which Lumbar Puncture Was Performed, per Cent |
|---|---|---|
| Germany | 28.63 | 4.13 |
| Denmark | 5.95 | ..... |
| United States | 56.91 | 68.40 |
| France | 8.26 | 11.11 |
| Great Britain | 10.28 | 21.43 |

There thus remain to be accounted for only 4,833 cases of primary syphilis and 8,365 cases of secondary syphilis. Even among these cases there was frequent evidence that regular serologic control of any sort was lacking.

Generally speaking, a lumbar puncture was seldom performed. The accompanying table shows the percentage of cases in which at least one lumbar puncture was done. It was further found that the general fundamental therapeutic principles of particular clinics were adhered to in actual practice in only an infinitesimally small number of the cases treated. Martenstein thought it astonishing that, in spite of this fact, the end results still were forthcoming in relatively favorable measure. He adds that in France the number of cures accomplished in cases of all stages is extremely high; nevertheless, the results obtained in that country through use of discontinuous treatment are not correspondingly favorable. Good end results are to be obtained on the one hand by the so-called continuous treatment, namely, that which is maintained over a long period, and, on the other hand, as in Denmark and Great Britain, by discontinuous (intermittent) treatment. A fair comparison of the benefits of the continuous treatment on the one hand with those of the highly successful discontinuous therapy on the other was not possible on the basis of the material in question.

The committee of the League of Nations then drafted recommendations for the treatment of fresh syphilis. The scheme of the discontinuous therapy is essentially a combination of the English and Danish methods, whereas the guiding principles of the continuous treatment closely follow those which have been established by the Cooperative Clinical Group in the United States.

Martenstein considers as an important point in favor of the continuous treatment that under it the patient is not given the erroneous impression that the treatment has ended, although such an impression is frequently conveyed if discontinuous treatment is used. In the latter a shortening of the intervals between separate treatments would do much to overcome this disadvantage, since a certain regularity in the administration of the treatments would then become more apparent.

### Foundation of the German Society of Hygiene

On the occasion of a meeting of the Society of German Scientific Investigators and Physicians, recently held at Dresden, the German Society of Hygiene was founded. The new society, according to the official announcement, will coordinate all the active forces in the field of hygiene for the more perfect functioning of preventive measures; the society also will seek to assure suitable instruction in hygiene in the universities and the indoctrination of the rising generation in the ideals of comradeship, ethics and honor that relate to hygienic-scientific activity. The society envisages itself as performing another important duty: the discovery of appropriate ways and means by which to indoctrinate Germans of all groups with the concepts of sound, prophylactic attention to health. The direction of the society was entrusted by the National Ministry of the Interior to the president of the National Bureau of Health, Prof. Dr. Hans Reiter. The policies of the society will be shaped by representatives of the ministry, by the national führer of physicians, by numerous research societies and by the social organizations affiliated with the National Socialist party.

The presiding officer of the new society, Professor Reiter, emphasized in this connection that it has been necessary to unite the various trends in hygienic endeavor into one German Society of Hygiene within the framework of which more favorable solution of major problems is assured by the establishment of departments in various special fields. Accordingly in the German Society of Hygiene will be merged the German Association for Public Hygiene, the German Social Hygienic Society and the German Microbiologic Association; further, there will also be indirect representation of the hygienic organizations existing in various localities in Germany, which will be regarded as local units of the German Society of Hygiene. The membership of the society is to include hygienists, both practitioners and scientific investigators, and especially instructors in hygiene in the universities, medical directors of state and communal health departments, medical representatives of the party organi-

zations who serve as hygienists, directors of institutions for care of the sick, and in addition sanitary engineers, sanitary architects, sanitary technicians and sanitary chemists so far as the latter are active in public service (in other words, the membership is not limited to physicians). The German Society of Hygiene will consequently work out a scientific and practical program for the formulation and elucidation of all hygienic problems and in its capacity as adviser to government and party in matters of health render a most welcome assistance to the National Health Bureau.

In conclusion, Professor Heinrich Zeiss of Berlin discussed the national function of German hygiene. It is his belief that the crucial problems of hygiene can be solved only through the new German medicine. The function of German hygiene may best be fulfilled through unified governmental direction as exemplified in the standardization of public sanitary affairs already contemplated. Finical hairsplitting must be abandoned and bacteriology in particular must embrace more synthetic and flexible concepts in theory and practice. The whole task demands a definite organization of German hygienists which must never again be dispensed with. This organized program under party and governmental sponsorship will form the basis for a successful attack on the German national hygienic problems of the future.

### Injections by Midwives

According to the terms of a decree just issued by the minister of the interior, the administration of pharmaceutic substances by midwives is to be restricted. The midwife must now abstain from independent administration, either external or internal, of such substances. Exceptions are made in those cases which demand that the patient receive certain medications pending the arrival of a physician as expressly stipulated in the manual of midwifery. According to the new regulations a midwife may administer an injection (*a*) if instructed to do so by a physician who is present, (*b*) if instructed to do so by a physician who is not present, (*c*) in emergency cases if instructed to do so by a physician whose arrival has been delayed. A midwife has no general authority to administer injections.

## SWITZERLAND

*(From Our Regular Correspondent)*

Oct. 20, 1936.

### Iodine Prophylaxis and Endemic Goiter

The canton of Bern is well known as one of those regions in which goiter is endemic. Since 1924 iodized common salt with a content of 5 mg. of potassium iodide to 1 Kg. of sodium chloride has been available to the Swiss public. Since Jan. 1, 1936, this salt has been generally distributed in the canton of Bern and salt that has not been iodized is no longer used. A few years ago the consumption of iodized salt was quite small in the canton of Bern; it amounted in 1933 to only 7 per cent of the total salt consumption, whereas in ten other cantons in late years nearly 100 per cent of the salt purchased was iodized and in another five cantons the corresponding figures stood between 50 and 100 per cent. Since many laymen and physicians have asserted that even a minimal admixture of iodine in common salt may be injurious, all alleged harmful effects of the iodine have to be carefully examined. The effectiveness of iodized common salt in the prophylaxis of goiter must, on the other hand, be studied. Dr. Wegelin, the Bern professor of pathologic anatomy, called attention in 1926 to the fact that the histologic picture of the thyroid in a new-born infant assumed a normal appearance if the mother had ingested iodized common salt during pregnancy. Large vesicles containing colloid were seen to appear in such cases. Wegelin was able, subsequently, to verify his observations many times. The weight of the thyroid of the new-born also underwent remarkable reduction; in seventeen of eighteen cases in which the gravid mother had used iodized common salt, iodine tablets or other preparations containing iodine the weight was from 1 to 6 Gm. In the remaining case it was 14 Gm. Unfavorable results also have been reported from some of the cantons, but others have reported notable successes. For example, in the Ausser-Rhoden section of the canton of Appenzell, more strongly iodized salt with 10 mg. of potassium iodide to 1 Kg. of salt has been in use since 1922. Congenital struma is on the way to complete disappearance in that locality. Animal experiments of Schmelling have demonstrated, moreover, that the thyroids of newly born rats are richer in colloid if the mother has been supplied iodine in small amounts.

As only scanty data on the iodine need of pregnant mothers were available, Wegelin induced his assistant, Dr. Steinmann, to make larger scale tests of the influence of iodine prophylaxis on the thyroid of the new-born. Steinmann collected data from the years 1909 to 1934 on the absolute and relative weight of the thyroid of 178 newly born infants. The material was divided into five groups on the basis of five year periods, save that the first group represented six years in order to include a sufficient number of cases. The two periods following 1924, that is, after the beginning of iodine prophylaxis with iodized common salt and other substances containing iodine, were now compared with the three previous periods and an unmistakable decrease in the absolute and relative weight of the thyroid was noted for the more recent years. For the period 1930-1934 the difference of the mean value exceeded the threefold mean error all along in contrast to the period prior to 1924, so that according to statistical rules the difference possesses a sure factual importance, whereas this cannot be universally established for the years 1925-1929. Furthermore, in the last decade an increase in the number of thyroid bodies of lesser weight (below 3 or, say, 6 Gm.) could be determined, whereas the number of large struma cases remains unchanged, as was to be expected. Among the prematurely born also the relative thyroid weight has sunk plainly since 1924. As there has apparently been no migration of pregnant women from goiter-free regions, it must be assumed that the decrease in weight of the thyroid among the new-born depends principally on the iodine prophylaxis of goiter.

By a second series of examinations, Schnetz has now determined that since 1924 a change in the character of the thyroid of children and of young adults has also appeared. A total of 8,460 cases covering the years 1909-1934 was collected, arranged according to age and, like the other group, divided into five periods of five or six years each. The data evidenced an obvious increase in the weight of the normal thyroid during the years 1930-1934 in persons from 5 to 25 years of age; that is, precisely in those persons whose thyroids were still in a sensitive state (the stage of diffused hyperplasia) at the time of the introduction of iodine prophylaxis. Hence, in this age group, a considerable decrease in cases of struma nodosa has occurred. The difference in the values in the years 1930-1934 here too has considerably exceeded the threefold mean error as opposed to the value in the period prior to 1924. In the upper age group (over 30), as had been expected, the number of nodular goiters remained approximately stationary, since the iodine no longer causes the nodes to disappear and, according to earlier examinations, from the twentieth year forward the incidence of struma nodosa in Bern amounts to between 67 and 90 per cent. Diffused struma tended to decrease among the youthful age groups from 1930 to 1934.

From these statistics it must be concluded that endemic goiter is on the wane in the canton of Bern and that iodine prophylaxis is largely responsible for this subsidence. To be sure, the influence of possible migrations from goiter-free regions has yet to be carefully examined. A more authentic perspective of the effect of iodized common salt will first be possible thirty years hence, after a greater number of the Bernese population

has developed from fetal life to adulthood under the influence of iodine prophylaxis. In that time it will likewise be seen whether the iodine dosage should perhaps be increased and whether any cases appear refractive to iodotherapy; that is, cases in which persons develop goiter in spite of the administration of iodine. The results to date still permit of the conclusion that with iodine prophylaxis the beginnings of a successful fight on goiter have been made.

Of further interest are the clinical data furnished as supplementary to the foregoing report and also discussed in the Bern Medical Society, all the more so as on the question of goiter prophylaxis by iodized common salt there still exists no unity of opinion even in the canton of Bern, wherein the disease may be so adequately observed. Professor Burgi, pharmacologist, stated in this connection that it was virtually impossible to form a durable basic compound of common salt and potassium iodide; it should be assumed therefore that occasionally a greater amount of iodine will be ingested. The amount, nevertheless, is still so small that reports of its injuriousness can scarcely be credited.

Prof. H. Guggisberg, gynecologist, verified Professor Wegelin's finding that to achieve maximal effect prophylaxis of goiter must be introduced before birth. Physical studies at the Woman's Clinic have disclosed that a large majority of infants are born with manifestly enlarged goiter. The measurements were taken on the third or fourth day when swellings due to birth had already completely disappeared and nevertheless the thyroid nearly always exhibits an essential hypertrophy, particularly pronounced in the lateral lobes. Not only is congenital struma a bodily defect for the new-born: it may bring in its train extensive cardiac alterations in the form of enlargement, besides disturbances of the longitudinal growth and of the ossification. Therefore the inauguration of iodine treatment for pregnant women encountered difficulties in many communities, as a number of investigators are of the opinion that there is a hyperthyreosis coextensive with pregnancy. The latter advise against the administration of iodine in pregnancy. Conversely, extensive investigations at the Guggisberg clinic have demonstrated that no certain signs of hyperthyreosis are evidenced.

Professor Glanzmann, pediatrician, stated that struma neonati was extraordinarily sensitive to iodine. A single dosage of 0.1 mg. of potassium iodide suffices to bring the gland to normal size. Now and then goiter is present in nurslings who have received an unvaried milk diet. The iodine tolerance of goitrous nurslings and children is in general excellent. In the common salt iodine prophylaxis and that administered in schools, Glanzmann hardly observed any hypersensitivity. On the other hand, some cases of large parenchymatous struma were observed among children, and this type of disease almost always showed itself refractive to iodotherapy.

Yet when all is considered on the basis of the collected data, the constant recession of goiter since 1924 speaks plainly for the effectiveness of iodine prophylaxis.

In this connection, several recent studies of endemic cretinism should be mentioned. This disease and endemic goiter are usually encountered in the same geographic regions. The investigations of this difficult problem, as it exists in Switzerland, by the Medical Faculty of Bern, have been most fruitful. The Bernese surgeon Theodor Kocher, a pioneer in his time, determined the similarity of manifestations in cretinism and in subjects who had undergone total extirpation of the thyroid. The theory that cretinism may be explained as a pure hypothyreosis (hypofunction of the thyroid) fails to receive full support either from observations among human beings or by experimentation with animals. A complete solution of this problem is not as yet possible. A forthcoming book entitled "Endemic Cretinism" by Professor de Quervain, now a surgeon at Bern, and Professor Wegelin contains the following statement based on extensive investigation of the field: "We know with certainty that endemic cretinism is attributable to a dysfunction of the thyroid produced by goiter noxa and that this dysfunction, already present in fetal life, continues in extra-uterine life to damage the thyroid body at a varying rate and in varying degree. Directly parallel, harmful effects on the entire organism by the noxa of goiter and simultaneous involvement of the other endocrines are possible but have not yet been demonstrated by anatomic, clinical or experimental evidence. For the peripheral disturbance of the organs of hearing there is still lacking up to the present an authoritative explanation of any kind whatever. The same is true of the increased incidence of cardiac disturbances, hernia, adenoid vegetations and an even apparent incidence of actual deformity within the endemic zones. It must be added that in future a complete solution of the problem will be reached only if, instead of singling out the goiter-free cretin dwarfs as was formerly done, all aspects of endemic thyreopathy are considered within the scope of investigations."

In the chapter on the prophylaxis and treatment of cretinism, Professor de Quervain guardedly refrains from use of the term "race hygiene" sometimes employed in this connection. Cretinism bears no relation to any race. Cretin offspring may appear among all races of men wherever the parental environment predisposes to the so-called noxa of goiter. Faulty, unhygienic living conditions are an important factor in the goiter zones. The most important factors in prophylaxis are housing in the widest sense of the term and the consideration of ventilation, light, good drinking water and good food. According to experimental demonstration, small doses of iodine act as a check on the noxa of goiter.

Cretinism cannot be considered a heritable disease in the true sense, as the majority of cretins are not the offspring of cretin parents but of normal parents, although to be sure the mother is frequently goitrous. Any sterilization legislation is in this connection out of place. As de Quervain emphasizes: "To sterilize all goitrous women because they may give birth to cretins would be to exterminate one section of the population for the benefit of another section which would in turn be subject to the same fate." Persons who present cretinism in its milder forms may become altogether useful citizens. Cretins possess such pleasant characteristics as "unfailing optimism," wittiness, liveliness at repartee, gratitude and a sense of humility. "Regions in which cretinism forms the undertone are therefore unsuitable for revolutionary experiments."

The theoretical concept of cretinism as a hypothyreosis has suggested that substitution therapy be attempted. However, the end results alike from implantation of a thyroid tissue that is capable of function as from the medicinal administration of thyroid preparations were, according to Professor de Quervain, "altogether modest."

## RIO DE JANEIRO

*(From Our Regular Correspondent)*

Oct. 15, 1936.

### Neurosurgery of Kidney

Dr. Silva de Assis, of Bello Horizonte, recently published an article on neurosurgery of the kidney, in which he reaches the following conclusions: The innervation of the kidney originates only in the autonomic nervous system. The reflex phenomena of sensory and secretory nature that take place in pathologic conditions of the urinary tract originate in interconnections of the ganglions of the renal plexus and in anastomoses of renal nerves. Fibers of smooth muscle are abundant in the structure of the calices, renal pelvis and ureter, as proved by histo-anatomic and physiologic studies of the structures. Peristalsis in the structures results from tonicity and contractility of smooth muscle fibers. The normal passage of urine from the kidney to the bladder is not passive. Peristaltic waves originate at the renal pelvis and propagate through the ureter, the seg-

ments of which are stimulated to progressive dilatation and contraction by the passage of urine. In these conditions there are simultaneously ureteral segments filled with urine and empty segments of the ureter. Renal nerves are not indispensable for the functions of the organ. The anatomic section of the renal nerves results in development of renal hypertrophy. The total functional capacity of enervated kidneys is increased in comparison with that of normal kidneys. Section of the renal nerves does not prevent peristalsis for the conduction of urine, which is maintained by the fibers of smooth muscle in the structures. Spasm of the smooth muscles of the urinary tract in pathologic conditions may result in obstructing the tract at the level of the calices, renal pelvis or ureter, with consequent retention of urine in the segment immediately over the obstructed one. Retention of urine is a frequent urologic disease in which stasis at the renal pelvis is the most frequent symptom. Satisfactory results in treating the condition depend on making an early diagnosis. The presence of a neuromuscular disequilibrium of renal sympathetic origin is the most important pathogenic factor of urinary retention and the cause of spasms, pain and muscular hypertonia. Total enervation of the kidney is indicated in retention of urine. It results in the control of pain and in reestablishing urination without causing disturbances to normal renal functions. The technic of the operation is described.

### Tonic Pupil (Adie's Syndrome)

Prof. E. Vampré, in a recent lecture before the Associacão Paulista, made a study of tonic pupil. The nature and seat of the disease are unknown. The condition was described in the literature in 1931. Subirana of Barcelona wrote a monograph on the subject in 1935. The most important point of Adie's syndrome is the one concerning the differential diagnosis from myotonic pupil and also from Argyll Robertson's sign. In the latter sign, frequently both pupils are involved in the miotic condition and the pupils are slightly dilated under the effect of cocaine and atropine. Pupillary myotony ordinarily is unilateral and the diameter of the pupil is rarely less than 3 mm. The pupil is normally dilated under the effect of cocaine and atropine. It contracts to convergence only after a few seconds and the contraction may increase even after suspension of convergence and accommodation. The pupil returns slowly to its original diameter.

## Marriages

DONALD STRATTON SEARLE, Worcester, Mass., to Miss Ruth Westcott Sheppard of Germantown, Pa., October 24.

GEORGE R. BARRETT, Pioneer Mine, B. C., Canada, to Miss Marjorie Elaine Gibbons of Nanaimo, in August.

MERCHISLAW M. SARNECKI, St. Paul, to Miss Margaret Fahnestock of Lincoln, Neb., September 6.

JEROULD A. CAMPBELL, Lockport, N. Y., to Miss Mary Dolores Griffin of Hornell, October 3.

HORACE ASA DAY, Orlando, Fla., to Miss Mary Elizabeth Schlater of Toledo, Ohio, October 10.

WILLIAM THOMAS CLARY to Mrs. Polly Gordon Bledsoe, both of Greensboro, N. C., in October.

WILLIAM E. LOCKHART JR., Canyon, Texas, to Lora Bell Kunze of Minneapolis, August 24.

JAMES FLEXNER, New York, to Miss Dorothy Mae Ensheimer of Harrison, N. Y., November 26.

DEWEY THURMAN NABORS to Miss Ida Susannah Thomas, both of Atlanta, Ga., October 10.

FRANK VANN CHAPPELL, Marianna, Fla., to Miss Mary Lee Lindsey of Perry, September 12.

JAMES M. CAMPBELL to Miss Lucile Box, both of Newton, Miss., September 12.

PAUL J. BLESSINGER to Miss Jo Gerber, both of Jasper, Ind., October 27.

## Deaths

**William Lafayette Rich** ✠ Salt Lake City; Washington University School of Medicine, St. Louis, 1907; member of the House of Delegates of the American Medical Association in 1923; past president and secretary of the Utah State Medical Association; fellow of the American College of Physicians; member of the medical advisory board during the World War; on the staffs of the Latter-Day Saints Hospital, Salt Lake General Hospital, Children's Hospital and St. Mark's Hospital; aged 58; died, November 17, of chronic myocarditis.

**William Hobbs Pritchard** ✠ Columbus, Ohio; Miami Medical College, Cincinnati, 1900; member of the American Psychiatric Association; for many years instructor in medicine in the mental department, Ohio State University College of Medicine; served during the World War; physician to the Ohio Hospital for Epileptics, Gallipolis, 1903-1905, and superintendent, 1905-1911; physician to the Columbus State Hospital, 1901-1903, and since 1916 superintendent; aged 69; died, November 11, of myocarditis.

**Joseph Hume** ✠ New Orleans; Medical College of the State of South Carolina, Charleston, 1901; professor of urology, emeritus, Tulane University of Louisiana School of Medicine; member of the American Association of Genito-Urinary Surgeons and the Clinical Society of Genito-Urinary Surgeons; fellow of the American College of Surgeons; on the staffs of the Touro Infirmary and the Flint Goodridge Hospital; aged 60; died, October 17, of glomerular nephritis.

**Stanley Perkins Warren,** Portland, Maine; Yale University School of Medicine, New Haven, Conn., 1874; member and past president of the Maine Medical Association; member of the New England Obstetrical and Gynecological Society; had served as obstetrician on the staffs of the Maine General Hospital, Maine Eye and Ear Infirmary and Webber Hospital; author of "Principles of Obstetrics"; aged 90; died, October 5, of hypertensive heart disease.

**Charles Duncan** ✠ Concord, N. H.; Harvard University Medical School, Boston, 1903; secretary of the New Hampshire Board of Registration in Medicine and State Board of Health; for many years member of the city board of education; on the staffs of the State Hospital, the Margaret Pillsbury Hospital and the New Hampshire Memorial Hospital; aged 64; died, November 12, of carcinoma of the stomach.

**George Chenery Anthony** ✠ Wellesley, Mass.; Boston University School of Medicine, 1904; member of the New England Roentgen Ray Society; served during the World War; member of the staffs of the Newton (Mass.) Hospital, Waltham (Mass.) Hospital, Leonard Morse Hospital, Natick, and the Union Hospital, Framingham; aged 57; died, October 22, of hypertensive heart disease and pneumonia.

**Robert Grant Thayer** ✠ Indianapolis; Indiana University School of Medicine, Indianapolis, 1930; on the staffs of the Methodist Hospital, City Hospital and Indiana University Hospitals; formerly on the staffs of the Central State Hospital, Indianapolis, and the State Hospital, Richmond; aged 34; died suddenly, October 30, in Richmond, of acute cardiac dilatation.

**Lester Howard McAllister,** Port Jervis, N. Y.; University and Bellevue Hospital Medical College, New York, 1908; member of the Medical Society of the State of New York; served during the World War; formerly member of the board of education; on the staff of St. Francis Hospital; aged 51; died, October 17, of myocarditis and coronary occlusion.

**Fred Albro Pringle** ✠ Montclair, N. J.; Maryland Medical College, Baltimore, 1912; member of the staff and formerly medical superintendent of the Essex County Hospital for Contagious Diseases, Belleville; member of the staff and secretary of the medical board of the Mountainside Hospital; aged 48; died, October 11, of coronary thrombosis.

**Randolph Lucien McCalla,** Boise, Idaho; Columbia University College of Physicians and Surgeons, New York, 1920; at one time assistant in medicine, instructor in medicine and assistant clinical professor of medicine at the University of California Medical School, San Francisco; aged 40; died, October 10, of uremia and cerebral edema.

**Frederic Codman Cobb,** Gloucester, Mass.; Harvard University Medical School, Boston, 1887; member of the Massachusetts Medical Society and the American Laryngological, Rhinological and Otological Society; aged 76; died, October 11, in the Baker Memorial Hospital, Boston, of gastric ulcer with massive hemorrhage and coronary sclerosis.

**Thomas George Sloan** ✠ Manchester, Conn.; Columbia University College of Physicians and Surgeons, New York, 1899; formerly instructor in anesthetics at Yale University School of Medicine, New Haven; for many years on the staff of the Manchester Memorial Hospital; aged 61; died suddenly, October 30, of coronary occlusion.

**Clinton M. Hiestand,** Springfield, Ohio; Medical College of Ohio, Cincinnati, 1894; member of the Ohio State Medical Association; past president of the Clark County Medical Society; served during the World War; at one time city physician; formerly on the staff of the City Hospital; aged 69; died, October 12, of uremia.

**Fremont W. Scott,** Medina, N. Y.; Hahnemann Medical College of Philadelphia, 1880; past president and secretary of the Orleans County Medical Society; formerly physician to the board of health of Medina and coroner; aged 80; on the staff of the Medina Memorial Hospital, where he died, October 19, of coronary occlusion.

**Alexander Hofheimer** ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1909; professor of internal medicine at the New York Polyclinic Medical School and Hospital; on the staffs of the Polyclinic and Gouverneur hospitals; aged 50; died, October 27, of coronary thrombosis.

**Benjamin H. Beydler,** Bridgewater, Va.; Baltimore University School of Medicine, 1897; member of the Medical Society of Virginia; on the staff of the Rockingham Memorial Hospital, Harrisonburg; aged 64; died, October 27, as the result of injuries received in an automobile accident last June.

**Robert Borneman Ludy,** Atlantic City, N. J.; Medico-Chirurgical College of Philadelphia, 1898; Hahnemann Medical College and Hospital of Philadelphia, 1900; formerly associate in medicine, Temple University School of Medicine, Philadelphia; aged 66; died, October 2, of cerebral hemorrhage.

**August Severin Eggers,** Grand Forks, N. D.; Kongelige Frederiks Universitet Medisinske Fakultet, Oslo, Norway, 1889; member and past president of the North Dakota State Medical Association; fellow of the American College of Surgeons; aged 73; died, October 7, of pernicious anemia.

**Edward B. Gossett** ✠ Kansas City, Mo.; University Medical College of Kansas City, 1894; for many years surgeon in charge of the Atchison, Topeka and Santa Fe Railway Hospital, Ottawa, Kan.; aged 71; died, October 16, in St. Joseph Hospital, of pulmonary embolism and bacillary dysentery.

**Alvah A. Swayze,** Hackensack, N. J.; College of Physicians and Surgeons, Baltimore, 1897; member of the Medical Society of New Jersey; past president of the Bergen County Medical Society; for many years on the staff of the Hackensack Hospital; aged 67; died, October 17, of paralysis agitans.

**John Fleming Chamberlain,** Natchez, Miss.; Tulane University of Louisiana Medical Department, New Orleans, 1906; member of the Mississippi State Medical Association; one of the owners of the Chamberlain-Rice Hospital; aged 59; died suddenly, October 26, of coronary thrombosis.

**Eugene Joseph Callahan** ✠ Staten Island, N. Y.; University of the City of New York Medical Department, 1894; past president of the Richmond County Medical Society; a founder and on the staff of St. Vincent's Hospital; aged 65; died suddenly in October.

**Matthew Barr Grieve,** Spokane, Wash.; University of Oregon Medical School, Portland, 1897; member of the Washington State Medical Association; at one time county coroner and city health officer; aged 71; died, October 6, of diabetes mellitus and uremia.

**George Webster,** Southbridge, Mass.; Baltimore Medical College, 1900; member of the Massachusetts Medical Society; formerly member of the board of health of Southbridge and school physician; on the staff of the Harrington Memorial Hospital; aged 61; died, October 27.

**Charles Blim,** Crete, Ill.; Rush Medical College, Chicago, 1888; member of the Illinois State Medical Society; formerly secretary of the southern Cook County branch of the Chicago Medical Society; for many years a member of the school board; aged 77; died, October 9.

**Ralph Sherrick Chamberlain,** Denver; Western Pennsylvania Medical College, Pittsburgh, 1903; at one time chief demonstrator of anatomy, Denver College of Physicians and Surgeons; aged 57; died, October 13, in the Presbyterian Hospital of heart disease.

**Frank Hamilton Hunt** ✠ Boston; University of Virginia Department of Medicine, Charlottesville, 1899; associate in medicine at Harvard University Medical School; on the staff of the Sanatorium Division of the Boston City Hospital; aged 60; died, October 26.

**William Patrick John Burke,** Hamden, Conn.; Yale University School of Medicine, New Haven, 1890; served during the World War; aged 68; died, October 17, in the Veterans Administration Facility, Newington, of heart disease and pulmonary tuberculosis.

**David Miller Shoemaker** ✠ Waynesboro, Pa.; Pulte Medical College, Cincinnati, 1905; served during the World War; past president of the Franklin County Medical Society; aged 63; on the staff of the Waynesboro Hospital, where he died, October 9, of carcinoma.

**John Miller Beggs,** Chattahooche, Fla.; Atlanta (Ga.) Medical College, 1914; member of the Florida Medical Association; aged 47; for many years on the staff of the Florida State Hospital, where he died, October 28, of carcinoma of the esophagus.

**Frederick William Hander,** Beaumont, Texas; University of Nashville (Tenn.) Medical Department, 1900; also a druggist; veteran of the Spanish-American War; aged 63; died, October 14, in the Veterans Administration Facility, Los Angeles.

**Edgar Clide Webb** ✠ Canon City, Colo.; Indiana University School of Medicine, Indianapolis, 1913; past president of the Fremont County Medical Society; on the staff of the Colorado Hospital; aged 53; died, October 30, of pneumonia.

**Francis Kennedy Armstrong,** Fort Myers, Fla.; M.B., University of Toronto Faculty of Medicine, 1892; and M.D., Victoria University Medical Department, Coburg, Ont., 1892; aged 68; died, October 26, in the Lee Memorial Hospital.

**Richard J. Ellis,** New York; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1910; aged 57; died, September 28, of self-inflicted incised wounds and of injuries received when he jumped from an eight story window.

**William Bradford Blanchard** ✠ Framingham, Mass.; University of Maryland School of Medicine, Baltimore, 1914; aged 56; died, October 13, in Palmer Memorial Hospital, Boston, of cerebral thrombosis and diabetes mellitus.

**Lloyd R. Atkins,** New York; Hahnemann Medical College and Hospital, Chicago, 1887; served during the World War; on the staff of the New York Medical College and Flower Hospital; aged 69; died, October 7, of heart disease.

**Louis David Hughes** ✠ Minneapolis; St. Louis University School of Medicine, 1909; served during the World War; member of the staff of the Deaconess Hospital; aged 48; died suddenly, October 23, of coronary thrombosis.

**William Egbert,** Calgary, Alta., Canada; M.B., University of Toronto Faculty of Medicine, 1889; M.D., Victoria University Medical Department, Coburg, Ont., 1889; formerly lieutenant governor; aged 79; died, October 15.

**Simon M. Chess,** Brooklyn; Long Island College Hospital, Brooklyn, 1912; member of the Medical Society of the State of New York; formerly assistant in medicine at his alma mater; aged 58; died, October 14, of heart disease.

**Wallace Archibald Watson,** Ponce Coupe, B. C., Canada; Northwestern University Medical School, Chicago, 1908; formerly on the staff of the Ponce Coupe Hospital; aged 52; died suddenly, October 14, at Dawson Creek.

**John William Lucas,** Brookville, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; member of the Indiana State Medical Association; aged 55; died, October 1, of angina pectoris.

**Harvey S. Kelsey,** Willis, Mich.; Saginaw (Mich.) Valley Medical College, 1901; American Medical Missionary College, Chicago, 1905; aged 65; died, September 4, in the University Hospital, Ann Arbor, of meningitis.

**Ellis Schwied,** Chicago; Chicago College of Medicine and Surgery, 1914; on the staffs of the Mount Sinai Hospital and the Frances E. Willard Hospital; aged 46; died, November 27, of coronary thrombosis.

**Lenzy E. McClure,** Walnut Grove, Mo.; St. Louis College of Physicians and Surgeons, 1903; member of the school board; aged 64; died, October 11, in a hospital at Springfield, of cerebral hemorrhage.

**Bert H. Honeywell** ✠ Ann Arbor, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1909; also a dentist; aged 59; died suddenly, October 4, of coronary thrombosis.

**William F. Beverly,** Nicholasville, Ky.; Medical College of Ohio, Cincinnati, 1888; aged 77; died, October 2, in the Good Samaritan Hospital, Lexington, of acute colitis and pulmonary emphysema.

**Charles Alexander Houston** ✠ Park Rapids, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1901; aged 60; died, October 30, of coronary occlusion and arteriosclerosis.

**Frank Lee Cato,** Leslie, Ga.; Jefferson Medical College of Philadelphia, 1887; member of the Medical Association of Georgia; aged 73; died, October 23, of chronic nephritis and diabetes mellitus.

**Lee Wilbert Roller,** Richmond, Ind.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1905; served during the World War; aged 62; died, October 15, of diabetes mellitus.

**Frank Conquelon Titzell,** Iowa City, Iowa; Chicago Homeopathic Medical College, 1889; member of the Iowa State Medical Society; aged 73; died, October 18, of carcinoma of the stomach.

**Stanley James Keyes,** New York; Long Island College Hospital, Brooklyn, 1908; member of the Medical Society of the State of New York; aged 53; died, October 4, of coronary thrombosis.

**Theodore Miller Leonard,** Buffalo; University of Buffalo School of Medicine, 1901; formerly assistant professor of medicine at his alma mater; aged 59; died, November 19, of bronchopneumonia.

**John Crockett Newton,** San Francisco; University of California Medical Department, San Francisco, 1902; aged 61; died, September 15, of arteriosclerosis, hypertension and bronchopneumonia.

**Joel Hasty Massie,** Dallas, Texas; College of Medicine and Surgery, Chicago, 1909; aged 48; died, September 18, in the Good Samaritan Hospital, Los Angeles, of auricular fibrillation.

**Robert W. Hawkins,** Brazil, Ind.; Medical College of Indiana, Indianapolis, 1895; served during the Spanish-American and World wars; aged 64; died, October 25, of cirrhosis of the liver.

**Nicholas Argyr,** Del Norte, Colo.; University of Colorado School of Medicine, Denver, 1934; member of the Colorado State Medical Society; aged 33; died, October 3, of pneumonia.

**Andrew Olans Flom,** Chisago City, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1912; aged 50; died suddenly, October 28, of cerebral hemorrhage.

**Harold Peter Prewett,** Antioch, Calif.; University of California Medical School, San Francisco, 1930; aged 32; was killed, September 5, near Reading, in an automobile accident.

**Alice Hall Chapman,** San Francisco; Woman's Medical College of Pennsylvania, Philadelphia, 1886; aged 78; died, September 10, in the Stanford Hospital, of myocarditis.

**Charles Ballard Hall,** Copenhagen, N. Y.; New York Homeopathic Medical College and Hospital, 1894; aged 68; died, October 18, of renal calculi and diabetes mellitus.

**Henry B. Thompson,** Hillsboro, Ohio; Medical College of Ohio, Cincinnati, 1882; aged 84; died, September 16, in the Hillsboro Hospital, of a hip fracture received in a fall.

**Rowland Peter Wild,** Traer, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1903; aged 56; was killed, October 24, in an automobile accident.

**Edwin Norman Chaney,** Pasadena, Calif.; Hahnemann Medical College and Hospital, Chicago, 1891; aged 71; died, October 11, of nonalcoholic cirrhosis of the liver.

**Henry Mark Koles** ✠ New York; Bellevue Hospital Medical College, New York, 1892; aged 75; died, October 15, in the Mount Sinai Hospital, of acute appendicitis.

**James Augustus Trotman,** Philadelphia; Temple University School of Medicine, Philadelphia, 1908; aged 60; died suddenly, October 29, of chronic endocarditis.

**John G. Maeder,** New York; New York Homeopathic Medical College, 1885; aged 81; died, October 12, in Upper Nyack, N. Y., of hypertensive heart disease.

**William Patrick Cross** ✠ Boston; Harvard University Medical School, Boston, 1896; aged 63; died, October 21, of coronary thrombosis and chronic myocarditis.

**Robert Hislop,** Detroit; Faculty of Medicine of Trinity College, Toronto, Ont., Canada, 1883; aged 80; died, October 4, in the Henry Ford Hospital of pneumonia.

**Porter W. Stevenson,** Gettysburg, Pa.; College of Physicians and Surgeons of Chicago, 1884; aged 89; died, September 3, of heart disease and arteriosclerosis.

**Solomon Baumgarten** ✠ Milwaukee; Medizinische Fakultät der Universität Wien, Austria, 1922; aged 39; died, October 11, in St. Joseph's Hospital of endocarditis.

**Royal August Henry,** Salinas, P. R.; Hahnemann Medical College and Hospital of Philadelphia, 1909; aged 49; died recently of staphylococcic septicemia.

**Ernest Frank Ruppe** ✠ New York; Bellevue Hospital Medical College, New York, 1883; aged 71; died, October 26, of chronic nephritis and myocarditis.

**William B. Radford,** Hopkinsville, Ky.; University of Louisville Medical Department, 1883; aged 75; died, September 17, of organic heart disease.

**Vance Gist,** Frederick, Okla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1880; aged 82; died, September 22, of cerebral hemorrhage.

**William Joshua Webb,** Los Angeles; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1878; aged 86; died, September 13.

**Theodore W. A. Blank,** St. Louis; Beaumont Hospital Medical College, St. Louis, 1890; aged 73; died suddenly, October 6, of heart disease.

**George Hathaway Gleason,** Milton, Mass.; Harvard University Medical School, Boston, 1902; aged 58; died, October 7, of cirrhosis of the liver.

**Forenci Elixis Hill,** Bainbridge, N. Y.; Eclectic Medical College of the City of New York, 1893; aged 72; died, October 21, of heart disease.

**Peyton L. Campbell,** Dallas, Texas; University of Louisville (Ky.) Medical Department, 1894; aged 70; died, October 1, of chronic nephritis.

**Charles H. Day,** Dayton, Wash.; Hahnemann Medical College and Hospital, Chicago, 1886; aged 80; died, October 5, of chronic myocarditis.

**Alonzo J. Marlar,** Billingsley, Ala.; Memphis (Tenn.) Hospital Medical College, 1892; aged 85; died, October 10, of mitral insufficiency.

**Houston Mifflin,** Norwood, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1879; aged 85; died, September 22.

**Emmet William Barry** ✠ Whitinsville, Mass.; College of Physicians and Surgeons, Baltimore, 1897; aged 65; died, October 6, of pneumonia.

**Philip B. Amunson,** Mondovi, Wis.; Rush Medical College, Chicago, 1895; aged 63; died, October 13, of cardiovascular renal disease.

**Samuel Logan McCullough,** Oakdale, Pa.; University of the City of New York Medical Department, 1884; aged 83; died, September 4.

**David Lawrence Redmond,** Buffalo; Niagara University Medical Department, Buffalo, 1887; aged 73; died, October 13, of arteriosclerosis.

**George Manuel Dooneief,** Brooklyn; Long Island College Hospital, Brooklyn, 1921; aged 40; died in October, of multiple myeloma.

**William Leonard Vickers,** Rialto, Calif.; Emory University School of Medicine, Atlanta, Ga., 1920; aged 42; died, September 6.

**Starke Hassell,** Miami, Fla.; Jefferson Medical College of Philadelphia, 1886; aged 75; died, October 6, of carcinoma of the prostate.

**Alfred James Parker,** Chicago; Chicago College of Medicine and Surgery, 1913; aged 62; died, October 6, of diabetes mellitus.

**Martin Luther Boyd,** Middle Township, N. J.; Detroit College of Medicine, 1908; aged 55; died, October 3, of tuberculosis.

**Frank Kennedy** ✠ Goodland, Ind.; Medical College of Indiana, Indianapolis, 1902; aged 57; died, October 4, of heart disease.

**Gottlieb Schick,** Oceanside, Calif.; College of Physicians and Surgeons of Chicago, 1887; aged 80; died, September 20.

**Joseph B. Cassell,** Harriman, Tenn.; Hospital College of Medicine, Louisville, Ky., 1897; aged 63; died in September.

**Charles Lot Browning,** Chico, Calif.; Cooper Medical College, San Francisco, 1894; aged 75; died, September 19.

# Correspondence

## BLOOD TYPING METHOD FOR DETERMINING PARENTAGE

*To the Editor:*—In Queries and Minor Notes in THE JOURNAL, October 31, the question is raised as to the efficiency of the blood typing method of determining parentage, together with the dependability and reliability of this method. The Pittsburgh physician also wishes to know about "the weaknesses of the method and the situations in which it is scientifically dependable and reliable."

While the answer cites that the blood tests prove only nonpaternity and the admissibility of evidence of blood grouping in the recent decision of the South Dakota Supreme Court, in my opinion more can be said in support of the "dependability and reliability of these blood tests."

It may, for instance, be mentioned that European courts have been using these tests for more than ten years, and Schiff collected 6,665 cases with 546 instances in which a false accusation was made. These figures, which do not include the more recent tests for M and N, must be considerably larger by this time. The courts of Germany, Austria, Denmark, Sweden, Norway, Switzerland and Lithuania recognize these tests; very likely this list of countries is incomplete.

In the United States, only New York and Wisconsin have laws on the statute books since 1935 authorizing their courts to order blood tests in suitable cases. The Wisconsin law, which I sponsored, states that "the results of the test shall be receivable in evidence but only in cases where definite exclusion is established." This makes it clear to the court and jury that the blood tests can prove nonpaternity only; if there is no exclusion, the tests are not accepted as evidence.

I recently framed a bill identical to the Wisconsin law, which is to be submitted to the New Jersey legislature, and Professor Matson writes me that he is preparing such a bill in Montana. There is no doubt that in the near future such laws will be found on the statute books of most or all states.

It is definitely known that the blood properties A and B as well as M and N are constant and readily demonstrable with the aid of suitable reagents. Numerous investigations throughout the world have established not only their hereditary nature but also the exact mechanism of the heredity. The theories for the heredity of the four blood groups and the M and N factors are supported by two independent sets of observations: (1) studies on thousands of families and (2) calculation of gene frequencies determined from the incidence of the serologic types among several races. In other words, the best known geneticists and mathematicians accept these theories as established. Furthermore, to my knowledge, I know of no published reports denying the validity of the observations reported.

At the same time I wish to take this occasion to call attention to the necessity of careful selection, preferably by the local medical societies, of suitably trained experts to perform these tests in those states authorized to accept the results as evidence. While the tests for the four blood groups do not present any technical difficulties, those for M and N require involved serologic procedures for the preparation of specific diagnostic reagents. In the first place, immune serums for M and N must be prepared by several injections of selected blood cells into rabbits. Preliminary tests are required to determine when the antibody for M or N is of sufficient potency. An individual qualified to do this work should have on hand a list of the three sorts of individuals (MN, M and N) in each of at least groups O, B and subgroups $A^1$ and $A^2$. These bloods are required for the absorptions in the preparation of diagnostic fluids the specificity of which should always be checked on the several varieties of known bloods. It is essential that no specific fluid be employed unless it exhibits potent reactions on sensitive cells; i. e., the difference between bloods possessing and those not possessing a given factor must be very distinct.

Taking these considerations into account, the reliability and value of these blood tests are so well established that American courts are now willing to accept these results as evidence.

PHILIP LEVINE, M.D., Newark, N. J.

## TEACHING PSYCHIATRY TO HOUSE OFFICERS

*To the Editor:*—Today it is generally acknowledged that, in the treatment of many patients, more is accomplished from the recognition and proper management of their mental conflicts than from the diagnosis and treatment of their somatic disturbances; not infrequently in our patients no organic disease is primarily responsible for their complaints. To put it another way, mind plays a large part in the mechanism of illness. All of this calls for a better knowledge of psychiatry on the part of practitioners than most of them have.

How to correct this situation is an important pedagogic problem of today. Better teaching of psychiatry now is being given in our medical schools, but this is not enough.

With a realization that patients at the Peter Bent Brigham Hospital would be better treated if those primarily responsible for their care knew more of the fundamental principles of psychiatry, I sought a means to that end. It was obvious to me that these house officers should have an opportunity to see and follow the management of mental patients in an institution planned for that purpose. How could this be brought about at no cost to the Peter Bent Brigham Hospital?

I took this problem first to Dr. James V. May, commissioner of mental disease of the Commonwealth of Massachusetts, and later to Dr. Winfred Overholser, his successor. Both were willing, actually eager, to cooperate, with the result that they offered to my medical house officers at the Peter Bent Brigham Hospital the opportunity of residence and practical instruction for four months in Massachusetts state hospitals. I incorporated in my medical service of sixteen months an additional period of four months to be spent at one of these state hospitals, the period following a four months experience in clinical laboratory work and preceding clinical service at the Peter Bent Brigham Hospital.

Now this plan has been in operation for a year, two men going to the Boston State Hospital and one to the Worcester State Hospital for each period. What is the result? A noticeable increase in interest in the mental conflicts of our patients and a greatly bettered method of handling their psychiatric problems. It has proved definitely worth while to Brigham patients, and I am sure it will be a continuous help to these house officers in their subsequent practice of medicine. The officers of these institutions have been enthusiastically concerned to see that these house officers learn as much as possible of psychiatry in the available time.

This plan is a practical means of meeting another deficiency in our scheme of educating men to practice a better medicine. Undoubtedly in the long run this plan too will bring a recompense to state hospitals for mental disease in developing practitioners ready to be more cooperative in meeting the enormous problem of the best possible care of patients afflicted with serious mental disease.

HENRY A. CHRISTIAN, M.D., Boston.
Physician-in-Chief, Peter Bent Brigham Hospital.

## "CARE OF THE NEW-BORN INFANT OF THE DIABETIC MOTHER"

*To the Editor:*—In THE JOURNAL, Sept. 19, 1936, appeared a contribution "Delivery and Care of the New-Born Infant of the Diabetic Mother," by Drs. Lawrence M. Randall and Edward H. Rynearson of Rochester, Minn. Their observations are of such importance that they should not be overlooked. Their experiences demonstrate the occurrence of certain signs and symptoms associated with hypoglycemia in babies of diabetic mothers. It is not only true, as they suggest, that some deaths in infants born of nondiabetic mothers may be associated with hypoglycemic conditions, but undoubtedly the signs and symptoms such as they describe are rather frequently seen in babies of nondiabetic inheritance.

In their cases there were valid reasons for attributing their etiology to malfunction of the pancreas. In infants of nondiabetic mothers, although as has been reported in the literature the pancreas may be at fault, one will probably as a rule need to look elsewhere for the cause of the disturbances. Although certain of the symptoms may disappear following irradiation over the thymus area, with our present knowledge one can hardly put the blame for the disorders, at least entirely, on the size of the thymus. For the present, we are hardly justified in concluding that the thymus gland functionally has or has not anything to do with the production of the various signs and symptoms under discussion.

The idea (Petersen) that the effects of the roentgen rays are those of nonspecific protein reactions points to the vegetative nervous system and to the endocrines as possible if not probable etiologic factors. In my experience, the theory involving hypocalcemia (tetany of the new-born), as a primary etiologic factor will seldom hold, either in the laboratory or therapeutically. The same is true of considering cerebral edema as a primary factor in the production of the symptomatology. Furthermore, how can one accurately diagnose cerebral edema (Shannon) in a babe without doing a spinal puncture? Even the ascertained presence of the edema does not of itself give the cause of the edema. Experience has convinced me of the truth of the statement "The symptoms of cerebral edema and anemia are the same" (McLeod). Newer information tends to indicate that the vitamin-B complex deficiency conjecture (Dennett, Moore) may not be so far different from the imbalanced neuro-endocrine (vagotonia) hypothesis (Aldrich).

In Randall and Rynearson's cases a true hyperinsulinism gives a valid reason for the hypoglycemia and associated symptoms. In the disorders of infants of nondiabetic mothers which simulate those which these authors describe, a hyperinsulinism is probably present. The hyperinsulinism is, however, probably a relative one rather than a true one. In other words, in many of the cases, if not in the majority of them, the hypoglycemia and symptomatology may very probably be due to a hypoactivity of the sympathetic system rather than to an actual hyperactivity of the parasympathetic system.

There are several good reasons why one may believe that such a disturbed neurohormone balance may be an important etiologic factor in the occurrence of these peculiar clinical syndromes in certain babes. In the first place, the mothers of these little patients frequently manifest evidences of an endocrine abnormality, particularly of the thyroid. The physiologic postnatal involution of the adrenals and the early inactivity of the infant's thyroid, either or both of which may be exaggerated in those infants whose inherent constitutional weakness (diatheses) may probably cause certain ones to be abnormally sensitive to their environmental stimuli in my opinion, supply a suitable basis for the origin of the disorders under discussion. Furthermore, that this hypersensitiveness may persist in later life in some individuals is manifested by allergic disorders, susceptibility to infections, and obvious endocrine diseases. Finally, the usual finding of a hypoglycemia and the consistent relief of the signs and symptoms following treatment based on the neuroendocrine hypothesis should be pretty convincing evidence. So many things may affect the dextrose metabolism of infants that one cannot depend too much on the blood-dextrose tests. Experience has convinced me of that. Randall and Rynearson's cases also demonstrate that a hypoglycemia may not necessarily be found. They believe as I do that the history, the clinical results and a therapeutic test are of more value, especially after other possibilities, particularly anatomic disturbances, have been eliminated as nearly as possible. When one has had, as I have had, during the past seven years, the repeated experience of seeing cases of the kind we are discussing effectively relieved following the administration of whole adrenal gland, and at times thyroid gland with appropriate feeding (*Illinois M. J.* **61**:345-355 [April] 1932; *Arch. Pediat.* **53**:851-866 [Dec.] 1933; M. Rec. **140**:189-193 [Aug. 15] 1934; *Illinois M. J.* **70**:244-250 [Sept.] 1936), one can hardly ignore such observations.

Just a word or two more. On page 997 of the same issue of THE JOURNAL which contains Randall and Rynearson's article there is an abstract (Thymic Death and Meteorological Environment) by Dr. S. A. Levinson which is particularly pertinent. Finally, D. B. Calvin (*Proc. Soc. Exper. Biol. & Med.* **34**:724 [June] 1936) has recently presented experimental observations which are very apropos.

ORVILLE BARBOUR, M.D., Peoria, Ill.

# *Queries and Minor Notes*

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### TESTS FOR SYPHILIS IN BLOOD DONORS

*To the Editor:*—What is considered the most practicable test for syphilis among prospective donors of blood to use in a little town? I have the equipment for taking and giving the blood but no way of determining the Kahn reaction except by mailing specimens to Jacksonville, Fla. I can be of real service here if I can give transfusions, as most of the people cannot afford hospitalization in West Palm Beach or elsewhere and no county organization will put up the money. I can construct shaker and water bath or other equipment but have forgotten the details of the Kahn test, which I suppose is the most likely test to be set up at small expense (granted I make a little equipment). Collections are too small for me to buy any such equipment as La Motte's for the "Kline Slide Test for Syphilis." And so if you could send me a protocol for an applicable test under the conditions in this city and suggest a drug house which sells in the region, I would appreciate it greatly. I am going to expose myself to the charge of radicalism by suggesting that there may be some method of applying neoarsphenamine to a prospective donor's blood, either before withdrawal or in vitro, which would render it innocuous from the standpoint of transmitting syphilis. Perhaps some work has been done already along this line.

G. J. POTTER, M.D., Clewiston, Fla.

ANSWER.—The Kahn test is generally considered practicable for testing the blood of prospective donors for blood transfusion. But any test for syphilis requires, for dependable results, expert knowledge in its performance.

Reagents for performing a Kahn test consist of (1) standard Kahn antigen, (2) physiologic solution of sodium chloride and (3) the blood serum to be tested, obtained by permitting the withdrawn blood to clot and by separating the serum from the clot after centrifugation. This serum is heated for thirty minutes in a water bath at 56 C. and is then ready for use in the test.

Equipment for performing a Kahn test consists of (1) two antigen vials for mixing the antigen with physiologic solution of sodium chloride, (2) a 0.2 cc. pipet graduated in 0.001 cc. for measuring the antigen-saline suspension, (3) three test tubes about 1 cm. in diameter and 7.5 cm. in height, (4) a 1 cc. pipet graduated in 0.01 cc. for measuring the serum to be tested, and (5) a test tube rack.

In performing the test the first step is to prepare the antigen-saline suspension. The amounts of antigen and physiologic solution of sodium chloride to use depend on the "titer" of

the antigen and are indicated on the label of the antigen bottle. The required amount of salt solution is measured into one of the antigen vials and the antigen in the other vial. The salt solution is poured into the antigen and the mixture poured rapidly back and forth one vial into the other about six times to assure thorough mixing. The antigen-saline suspension is permitted to stand for ten minutes. After this period, the following three quantities of the suspension are measured by means of the 0.2 cc. pipet into the three test tubes: 0.05 cc. into tube 1, 0.025 cc. into tube 2 and 0.0125 cc. into tube 3. These quantities are deposited in each case to the bottom of the tubes. To each tube is then added 0.15 cc. quantities of the heated serum, and the rack is shaken to permit thorough mixing of the serum with the antigen suspension. The rack is now shaken for a three minute period, either by means of a shaking apparatus or by hand. This step is followed by adding 1 cc. of salt solution to tube 1 and 0.5 cc. to tubes 2 and 3. After mixing, it will be found that, if the serum tested came from a nonsyphilitic person, no visible precipitate will be present, but if the serum came from a syphilitic person, a precipitate will be suspended in the fluid. Marked precipitation in the tubes is read four plus; weaker precipitation is read three plus, two plus, one plus or doubtful, depending on the degree of precipitation. The final result of the test represents the average reading of the three tubes. Thus, the Kahn reaction is reported four plus if each of the three tubes gives a reading of four plus. If the readings in the three tubes are negative, two plus, four plus, the final reaction is two plus. When testing the serum of a donor, it is necessary at the same time to test also several control serums, both of nonsyphilitic and of syphilitic origin.

Standard Kahn antigen for this purpose will undoubtedly be furnished by the State Health Department Laboratories at Jacksonville, although it may be obtained also from any of the representative biological houses.

The suggestion of mixing a prospective donor's blood with neoarsphenamine is an interesting one. It would, however, require extensive research to determine the quantities of this drug to employ with given amounts of syphilitic blood containing definite numbers of spirochetes. It is obviously far simpler and safer to employ blood from nonsyphilitic persons than to attempt to employ "sterilized" blood from those who are syphilitic.

## GONADOTROPIC SUBSTANCE AND DESCENT OF TESTIS

*To the Editor:*—Will you kindly refer this letter to the writer of the editorial entitled "Clinical Application of Hormones of Anterior Pituitary and Gonads," which appeared in THE JOURNAL Oct. 24, 1936? I would like to have such figures and facts as may have been collected in proof of the statement "It is somewhat difficult to find an article reporting the failure to produce descent of the testes by injection of gonadotropic substance, yet many such failures occur." This statement is pertinent to some results in endocrine therapy of cryptorchidism in which I am interested.

JAMES B. HAMILTON, PH.D., Albany, N. Y.

ANSWER.—The sentence quoted from the editorial is a little lost without its context, but the thought was that there is a great deficiency of articles in the literature on the subject of the treatment of undescended testes. The facts are obvious, namely, that the literature is filled with glowing reports and that only rarely can any one find an article reporting failure, yet success does not always attend such efforts. One well known urologist comments on the fact that most of the pictures illustrating such articles showing the condition before and after treatment almost invariably show a well developed scrotum before gonadotropic substances are injected. It has been his experience that in the presence of a well developed scrotum there is almost invariably descent, although sometimes the descent is a little later than is normally seen.

Since the editorial mentioned was published, the Central Society for Clinical Research has met. On that occasion Dr. W. O. Thompson and his associates from Chicago presented a paper entitled "The Present Status of the Treatment of Undescended Testes." The author's abstract says: "In contrast to the large percentage of successful results (70 per cent on the average) reported by various observers in the treatment of undescended testes with an anterior pituitary-like substance, we were able to produce descent in only about 20 per cent of the cases. In four or five cases showing descent, the testis could be pulled to the upper end of the scrotum or nearly to this level before treatment was started. In all successful cases descent occurred within one month, but stimulation of genital growth persisted for a much longer time. In all patients treated surgically after prolonged administration of anterior pituitary-like substance, anatomic factors making descent difficult or impossible were present. However, the stimulation of genital growth produced by preoperative treatment with this material seemed to make surgical procedures less difficult. It would thus appear that, in the present state of our knowledge, operative procedures are necessary in most cases of undescended testes but should be preceded by from four to six months of treatment with anterior pituitary-like substance."

## PSYCHASTHENIA IN CHILD

*To the Editor:*—A white boy, aged 13 years, seen in December 1935, refused to attend school because of a burning sensation in the epigastrium, which was present on arising and continued until about 10 a. m. If the boy slept late in the morning there was no discomfort. The burning sensation became worse if he attended school and continued throughout the day. It was decided to have him attend school in the afternoon, but then in the afternoons when he was ready for school a transient diarrhea developed which precluded this. He was a normal, full-term child, who talked at 7 months, teethed at 1 year and walked at 16 months. At 5 years of age he had an attack of chorea which persisted until he was 9, when following an acute febrile infection lasting about three weeks he was apparently cured. He was vaccinated at 6. He had frequent sore throats with marked cervical adenopathy. He had enuresis until 11 years of age, which ceased after an attack of chickenpox. At the onset of the chickenpox, he fainted in school. Since then because he frequently had marked flushing of his face, especially when he attempted to read, the teachers sent him home. They were afraid he would faint. About one year ago, he finally refused to attend school. He was sent to another school, but although his behavior was excellent and his grades good the epigastric discomfort ended his attendance. At home he is usually quiet, though he is subject to frequent outbursts of temper when he does not have his own way. He doesn't associate much with other children. His parents are worrisome but apparently in good health. His mother had two miscarriages, at three and five months, prior to the birth of the patient. There is another child, a boy, aged 7 years, who is thin but healthy and active. There is no history of familial or hereditary diseases. The family is of moderate means. The patient is a well nourished, preadolescent boy, weighing 95 pounds (43 Kg.). He is unable to sit quiet. He scarcely opens his mouth when talking and his voice is whining in character. The cheeks are flushed at all times. The temperature is normal. The pulse varies from 90 to 110. The systolic blood pressure ranges from 130 to 180 (usually 160) and the diastolic pressure is 80. There is no abnormal fat distribution. The contour of the head is normal. The ears and eyes are normal. There is an occasional purulent discharge from the nose. The teeth and tongue are normal. The tonsils are enlarged. There is a palpable cervical adenopathy. The thyroid is not enlarged. The chest is essentially normal. The heart beat is rapid and forceful, with a presystolic mitral murmur. Peristalsis is hyperactive. There is no tenderness of the abdomen. There are no palpable masses or enlarged organs. The genitalia are normal, preadolescent. Both testicles are descended. The rectum externally is normal. The hands are cold and purplish; there is visible perspiration; there are no tremors. The reflexes are slightly exaggerated. The Babinski reflex is negative. There are no eruptions on the skin. There was axillary sudation during the examinations. There is no tenderness of the back or deformity of the spinal column. The urine is normal. Hemoglobin is 14 Gm. Red blood cells number 4,800,000; white blood cells 5,000; neutrophils 65 per cent; lymphocytes 30 per cent; eosinophils 2 per cent; basophils 1 per cent; myelocytes 2 per cent. The Wassermann reaction of the blood is negative. Tuberculin tests are negative. Roentgenograms of the skull, chest and abdomen reveal a small pituitary fossa, a cardiac silhouette suggestive of mitral disease, enlargement of the spleen and the liver, and coarse trabeculations in the spine and pelvis and ribs. There are no other significant manifestations. Please omit name.

M.D., Pennsylvania.

ANSWER.—The history of this boy indicates that he is of a neuropathic nature if not of a psychasthenic type. It is significant that he developed normally, talking at 7 months, and equally important is the fact that he had a persistent chorea from the fifth to the ninth year and an acute febrile infection of three weeks' duration. An attack of chorea lasting four years suggests the possibility of an encephalitis at that time, and the present symptoms might be interpreted as postencephalitic behavior disorders. The symptoms such as flushing, cold and purplish hands seem to indicate a lack of vasomotor stability. In the absence of more definite signs one would be inclined to interpret the burning sensation in the stomach as an indication of a gastric neurosis. In addition to the various tests that have already been made it would seem advisable to observe the daily temperature course, to note the presence of tremors and the pulse rate, and to obtain the basal metabolic rate in order to show the presence or absence of a hyperthyroidism. Some stress has recently been laid on the relationship of hypoglycemia to nervous symptoms such as have been described; consequently it might be well to estimate the blood sugar. In view of the possible postencephalitic character of the condition it would be well to repeat all the neurologic tests, including an ophthalmologic examination and a routine visual test.

The management of such a boy as a rule causes anxiety and difficulty for the parents and discomfiture to the attending physician. The time comes when he is almost unmanageable in the home. It should not be forgotten that a patient with

such symptoms as this boy presents may develop a genuine psychosis. If the boy could be sent to a school away from home, to a summer camp, or placed in the hands of considerate and intelligent friends, some improvement might result. It would seem that if no tangible evidence of organic or functional cerebral disease can be elicited, it would be in the interest of this boy to seek the advice of a psychiatrist.

## SURFACE TENSION OF MALIGNANT CELLS

*To the Editor:*—I am interested in obtaining information regarding the surface tension determinations in malignant cells. Any information, reprints and abstracts covering this subject would be greatly appreciated

ROY J. POPKIN, M.D., Los Angeles.

ANSWER.—The direct determination of surface tension of individual malignant cells cannot be satisfactorily made because such cells when isolated in culture or otherwise can never be considered as existing under the same conditions as they would in the body. A considerable number of studies have been made by determining the surface tension of extracts from cancer cells, but obviously the surface tension so determined cannot be considered as being the same as that of the uninjured cell. A bibliography of pertinent observations, including studies on permeability which is not the same as surface tension necessarily, is appended.


Bauer, E.: Theoretische und experimentelle Untersuchungen über die Entstehungsbedingungen des Carcinoms: Zugleich ein Beitrag zur Frage des konstitutionellen Momentes, *Ztschr. f. Krebsforsch.* **20:** 358, 1923. Lowered surface tension in blood serum of carcinoma patients.

Bauer, E.: Weitere Beweise der Bedeutung der verminderten Oberflächenspannung für das Entstehen und Wachstum des Krebses, *München. med. Wchnschr.* **72:** 1723 (Oct. 9) 1925. Treatment based on lowered surface tension.

Bauer, E., and Lasnitzki, A.: Oberflächenspannung und Metastasenhäufigkeit, *Klin. Wchnschr.* **4:** 395 (Feb. 26) 1925. Parallel between frequency of metastases and surface tension of their press juice.

Blumenthal, Ferdinand: Ueber das Wachstum bösartiger Geschwulste, *Med. Klin.* **20:** 555 (April 27) 1924. General review of recent work, with special reference to Bauer's hypothesis of lowered surface tension.

Saitschenko, A.: Altersveränderungen der Oberflächenspannung des Blutserum (Ein Beitrag zur Frage der Altersdisposition für Krebs), *Biochem. Ztschr.* **219:** 447, 1930. Surface tension decreases with age. As cancer increases with age, the observations support the view that lowered surface tension favors the development of cancer.

Baturenko, T., and Timofejewa, L.: Zur Frage der Oberflächenspannung des regenerativen Gewebes, *Ztschr. f. Krebsforsch.* **37:** 436, 1932.

Krontowski, A. A.; Bereschanski, P. G., and Majeroski, M. M.: Untersuchungen über die Oberflächenaktivität der beim Wachstum und Zerfall der Gewebe in vitro gebildeteten Subztanzen, *Arch. f. exper. Zellforsch.* **4:** 85, 1927; abstr. *Cancer Review* **2:** 408, 1927.

Hennemann, I. P.: Oppervlaktespanning bij kwaadaardige gezwellen, *Geneesk. Tijdschr., Nederl. Indië* **72:** 1278 (Sept. 13) 1932. Surface tension extracts of a transplantable Cysticercus rat sarcoma higher than normal, but that of extracts of a similar spontaneous sarcoma the same as extracts of liver and muscle.

Hoffmann, C.: Beitrag zur Frage der Krebsentstehung durch Oberflächenaktivität, *Ztschr. f. Krebsforsch.* **38:** 665, 1933. Surface active materials produced no tumors in guinea-pig.

Kaneko, S.: Lowering of the Surface Tension of the Blood Plasma of Sarcoma-Bearing Chicken, *Tr. Jap. Path. Soc.* **22:** 966, 1932; abstr. *Ztschr. f. Krebsforsch.*, ref. **39:** 105, 1933.

Kagan, C.: Der Einfluss der künstlichen Oberflächenspannungserniedrigung auf das Wachstum transplantabler carcinome, *Ztschr. f. Krebsforsch.* **21:** 453, 1924. Tumor emulsion exposed to tributyrin lowers surface tension. Tumors seem to appear somewhat earlier and reach a somewhat larger size, but only twenty-two mice were employed.

Kagan, C.: Ueber die Oberflächenspannung in Extrakten aus malignen Tumoren, *Ztschr. f. Krebsforsch.* **21:** 155, 1924. Surface tension of colloids from cancer lower than that of corresponding normal tissues.

Maksimovic, B.: Zur Frage der Oberflächenspannung des Blutserums bei bösartigen Neubildungen der weiblichen Sexualphäre, *Ztschr. Akus.* **44:** 281, 1934; abstr. *Ztschr. f. Krebsforsch.*, ref. **40:** 177, 1934. Extract has neither diagnostic nor prognostic value.

Svehla, K.: Les relations entre la tension superficielle du sérum du sang et sa teneur en calcium dans le carcinome, *Compt. rend. Soc. de biol.* **94:** 980, 1926. Lowered surface tension of cancer patients is in direct proportion to the lowering of the calcium content of the serum.

Kopaczewski, W.: Perméabilité cellulaire et problème du cancer, *Le François*, Paris, 1934. Reviewed in *Index Anal. Cancerol.* **8:** 581, 1934. Cancer, possibly due to increase in permeability of cell periphery.

Kopaczewski, W.: Tension superficielle des substances cancérigenes, *Compt. rend. Soc. de biol.* **118:** 1142, 1935.


The most recent articles are the following:


Traube, and Knake, E.: Ueber die Regulierung des Wachstumgleichgewichtes von Epithel und Bindegewebe durch Faktoren, welche die Zellpermeabilität erhöhen und ihre Bedeutung für das Krebsproblem, *Ztschr. f. Krebsforsch.* **42:** 324, 1935. Significance of surface tension for growth in general and for cancer in particular.

Knake, Else: Ueber die Bedeutung der Permeabilität das Gewebswachstum, *Ztschr. f. Krebsforsch.* **42:** 329, 1935. Changes in cell permeability exert an influence on growth.

Heubner, W., and Orezechowski, G.: Permeabilität und Wachstum. Bemerkungen zu der Mitteilung von Else Knake, *Ztschr. f. Krebsforsch.* **42:** 329; **43:** 284, 1936. Knake and Traube have drawn deductions which are not warranted by their facts.

Kikuchi, T., and Kawanishi, G.: Surface Tension of the Tissue of Uterine Tumor, *Jap. J. Obst. & Gynec.* **18:** 340, 1935; abstr. *Am. J. Cancer* **26:** 796 (April) 1936, as follows: Many investigators have recorded their determinations of the surface tension of blood or tissue fluids in malignant disease, but not one has stated when the readings were made. Yet, as surface tension decreases with the lapse of time, this is an important point. Taking the factor of time into consideration, the author compared extracts of uterine carcinoma, myoma and chorionepithelioma with those prepared from normal portions of the corresponding uteri, using a Hartmann-Braun torsion balance after Brinkmann's method. Extracts of all three tumors had a surface tension lower than the control preparation. The material examined consisted of ten carcinomas, ten myomas and five chorionepitheliomas.


## GASTRORRHAGIA

*To the Editor:*—I have recently had occasion to look after a case of "gastrorrhagia" in a man, aged 26. At the age of 10 years he had the small veins of his nose cauterized because of severe attacks of prolonged epistaxis. Subsequently there were no further attacks of nasal bleeding but at frequent intervals the patient was prostrated by severe gastric hemorrhages, which recurred every two to six months over a period of ten years. All treatment, with the exception of transfusion, failed. The patient was given several transfusions at each attack. (He received eighty-seven transfusions in from five to seven years.) At one time peptic ulcer was suspected (although x-ray examination was negative) and a posterior gastro-enterostomy was done with no apparent benefit. The patient still had attacks of bleeding. Finally, when he was 26 years of age, he died during a severe hemorrhage. All the laboratory examinations gave normal results except for the manifestations of a secondary anemia during the periods of relapse. The platelet counts and clotting and bleeding time tests were all normal. No evidence of blood dyscrasia could ever be demonstrated. At the autopsy all organs were normal except for the stomach, which contained many small punctate erosions in the lining, about 100 in all, from which bleeding had obviously occurred. Under the microscope, these appear merely as small superficial regions of necrosis in the mucosa. I would greatly appreciate information regarding the name of this condition, references to literature and any other pertinent information that you might have. Kindly omit name.

M.D., Washington.

ANSWER.—This is a good description of a disease that perhaps deserves a special name. No description of it appears to have been published but during the last several years a number of cases have been seen. Curiously a number of the victims were physicians. In one of the worst of these cases there was some family history of similar bleeding. One patient was seen to bleed to death, and the necropsy showed absolutely nothing that could be recognized as a bleeding point. In some cases there were some symptoms suggesting ulcer, and in others there were no such symptoms. Operations were futile, as one might expect.

Fortunately, a large percentage of the patients are able to survive many severe hemorrhages. One physician has now gone several years without bleeding, but naturally he lives in constant dread of another attack. In most of the cases expert hematologists were unable to find changes in the blood characteristic of any known disease in which bleeding is common. There has been a suggestion in one or two cases that allergy may be a factor. Naturally, treatment is very difficult when the mechanism of the disease is unknown. In a few cases Dr. Charles Watkins of the Mayo Clinic has found moccasin venom to work beautifully. It deserves further trial. In every case, expert hematologists should be consulted.

## ETIOLOGY OF GRANULOCYTOPENIA

*To the Editor:*—Could subjection to gases from burning coals and ashes over about a period of six months be conducive to the production of agranulocytic angina? The coal in question is semianthracite. Kindly omit name if published.

M.D., Pennsylvania.

ANSWER.—The amount and variety of gases given off by burning anthracite coal are dependent on the conditions under which the combustion occurs. If combustion is incomplete it is possible that the smoke and fumes may contain a wide range of compounds, including benzene and the so-called coal tar products. If combustion is complete with an adequate oxygen supply and the residue burned to an ash, it is unlikely that such compounds are given off in appreciable amounts.

Assuming, however, that an individual is subjected to such compounds by inhalation over a period of six months, it is again problematic whether the inhalation of such products could produce agranulocytosis. There is some evidence that it is possible especially if the fumes contain benzene ($C_6H_6$). It has been demonstrated that the injection of benzene does consistently produce the hematologic picture of agranulocytosis in rabbits (Kracke, R. R.: *Am. J. Clin. Path.* **2:**11 [Jan.] 1932). However, when rabbits are subjected to inhalation of this chemical, no hematologic changes result. It would appear that a pulmonary defensive mechanism prevents its development.

Furthermore, leukocytic depression has not been observed often in workers who inhale benzene for many years (Hamilton, Alice: Industrial Poisoning, New York, Macmillan Company, 1925).

To summarize, it appears possible that such conditions could be conducive to the production of agranulocytosis. It would depend on the type of fumes given off, and on the presumption that the inhalation of these could so depress the hematopoietic centers as to result in leukocytic depression. The entire question is one that deserves investigation by those who work in the field of industrial medicine.

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### PERFUMES AND ORRIS ROOT—CHICLE—PEANUT BUTTER AND SOY BEAN—"SPRY"

*To the Editor:*—1. Are there any perfumes on the market that can be safely used by a patient sensitive to orris root? 2. What are the ingredients of Wrigley's chewing gum to which an allergic patient might be sensitive? 3. Does most peanut butter contain soy bean? Can you give me the name of some brand that does not? 4. Can you tell me the ingredients of the shortening "Spry"?

LOUISE O. KAPPES, M.D., Evanston, Ill.

ANSWER.—1. Orris is used in cosmetics as an absorbing agent for perfumes. Patients sensitive to orris root are not necessarily sensitive to perfumes. If such sensitivity is present, its determination is a specific problem in each individual case and for each perfume.

2. The main ingredient in all chewing gums is chicle. Chicle sensitivity is not common but has been described. Sensitivity to other substances used for flavoring, as peppermint or spearmint, is likewise uncommon.

3. Peanut butter, if so labeled, does not contain any soy bean product unless it is used as an adulterant. If contained in such product this should be stated on the label in accordance with the Food and Drug regulations.

4. The composition of the shortening "Spry" is a trade secret. Most shortenings on the market are composed of hydrogenated cottonseed oil. Hydrogenated coconut oil and corn oil are frequently mixed with this.

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### FUNCTIONAL VOMITING

*To the Editor:*—A white woman, aged 28, married, a high school teacher, presents the chief complaint of nausea and vomiting at frequent intervals over a period of six months. She has been susceptible to car sickness and sea sickness for about six years, but prior to the present illness there was no history of apparently causeless vomiting. Her appendix was removed in 1921, and in 1932 an operation was performed for a cystic ovary, at which time some adhesions from the previous operation were released. Following the second operation she experienced severe vomiting for three days and nights, which stopped suddenly, and the convalescence was otherwise uneventful. In November 1935 she began to be nauseated at frequent intervals, often with vomiting, and principally in the morning. At one time she was in bed for a week, and at times the vomiting was "almost constant." It seems to be brought on by excitement. Nausea is definitely relieved by lying down, to a less extent by vomiting, and is made worse by eating. She has been married for eight months but has had no menstrual irregularity at any time and presents no indications of pregnancy. Recently she also complained of a slight evening rise of temperature—to about 99.6 F. Physical and x-ray examinations of the chest are negative. Fluoroscopic examination of the stomach shows an organ hanging well below the iliac crests. When she first swallowed the barium it seemed as though there was a constriction between the fundus and the dependent portion, but this opened up as more barium was taken. After an hour the barium had collected in the dependent portion, and almost none had passed into the duodenum. We have advised more frequent feedings of a nonirritating nature, support and atropine. It is too soon to tell whether this will bring any results, but we are anxious to have any help that is available.

M.D., Virgin Islands.

ANSWER.—The impression gained from the history is that the woman is suffering with some type of functional vomiting or regurgitation. It would help greatly to know whether the trouble is regurgitation rather than vomiting. With nervous regurgitation mouthfuls of food begin to come up often before the patient leaves the table, and there is no complaint either of nausea or of retching. This syndrome is a definite clinical entity, and the cause must be a nervous one because operations are practically always useless, even when a gallstone or a diseased ovary or suspicious looking appendix can be found on abdominal exploration.

It would be most helpful to find out whether this woman is entirely satisfied with her marriage or if she is much afraid of pregnancy. Treatment should consist mainly of rest and psychotherapy. The patient should understand that she must make a big effort to keep food down. Otherwise, the regurgitation increases in severity like a bad habit. Rest in bed often helps. Sometimes feeding by stomach tube helps if the patient knows that this will be discontinued when she learns to hold her food down. Sedatives may have to be used. A dry type of diet may be helpful, the patient taking necessary liquids between meals.

If the patient keeps a record she may find that some one food is regurgitated more than others are and the removal of such food from the diet may bring considerable relief. The giving for two days of an elimination diet consisting of only lamb and rice will often tell whether modification of the diet will help at all.

Constipation should be avoided since the stagnation of material in the colon can produce back pressure in the small bowel, and this increases the tendency to regurgitation. The best way of relieving constipation may be to give a daily enema of physiologic solution of sodium chloride.

In order to succeed with treatment the physician must not waver in his diagnosis; he must not get to wondering out loud whether there might be some lesion present in the abdomen to account for the trouble. As was said before, even when lesions are present they do not produce or even influence the typical syndrome of regurgitation immediately after meals.

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### BENZENE POISONING

*To the Editor:*—I am treating a man, aged 45, who has an aplastic anemia due to benzene poisoning. He has had whole blood transfusions of matched and typed blood by the Vincent tube method. He does not respond to liver diet, diluted hydrochloric acid or pentnucleotide. What more can I do with reason and safety? The man is in a hospital where we may have every help. Kindly give reference to reports from THE JOURNAL.

C. R. LEWIS, M.D., Akron, Ohio.

ANSWER.—The chief therapeutic measure in the management of benzene poisoning is transfusion, either with whole blood or with citrated blood. The citrated blood method has the advantage that cutting down on the vein is not necessary and that preservation of a vein for repeated transfusions is possible. It is important to transfuse primarily to control bleeding and not simply for anemia. The beneficial effect of transfusion on the hemorrhagic tendency may last from two to five days. Mechanical means of controlling bleeding, such as packing the nose, are dangerous, as tissue ischemia, necrosis and secondary infection may easily occur with the neutropenia common in benzene poisoning. No specific benefit will be obtained from any type of substitution therapy, such as the use of liver, stomach, iron or vitamin preparations. However, to assure optimal conditions for blood production, the oral administration of iron and liver or stomach preparations should be carried out. Parenteral liver extract is undesirable because of the increased possibility of infection at the site of injections if neutropenia is present. Pentnucleotide may be used but probably has no specific benefit in this condition and again demands injection. If severe neutropenia and secondary sepsis do not occur and bleeding can be controlled by frequent transfusions, there is a good possibility that after a time the bone marrow will begin to supply more red cells, granulocytes and platelets, and therefore anemia, leukopenia and purpura will be diminished. A normal erythrocyte count will ordinarily not be regained before many weeks or until erythrocyte production has returned to a normal level. Patients with severe neutropenia and/or fever usually, but by no means invariably, have a poor prognosis.

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### VITILIGO

*To the Editor:*—A Mexican, aged 28, had a nervous breakdown a year ago. Two months after the breakdown, disseminated spots of white depigmentation broke out on the skin on the left side of the neck. His weight is around 200 pounds (91 Kg.). I have tested all the reflexes and found all responding and in normal condition. I have diagnosed the condition as vitiligo. Please state whether this diagnosis is correct; also the best and most accepted treatment in such cases. Please omit name.

M.D., California.

ANSWER.—The occurrence of "disseminated spots of white depigmentation" with the absence of atrophy in the patches is called vitiligo, or acquired leukoderma.

The specific etiology of vitiligo is unknown, and it has been attributed to neurotic disturbances, trophoneurosis, endocrine disturbances and hereditary defects. It may follow or be associated with other dermatoses.

The course is slow, chronic and usually progressive. No specific effective therapeutic agent has been found to date. Locally, the surrounding skin may be bleached with 5 to 10 per cent ammoniated mercury ointment or 10 per cent hydrogen peroxide in anhydrous wool fat and petrolatum. The bathing

of the depigmented patches with 10 per cent of oil of bergamot in alcohol, and subsequent exposure of the site to ultraviolet rays or strong sunlight, is sometimes effective in increasing pigmentation of the sites. Gold sodium thiosulfate, intravenously (Lindsay, H. C. L.: Treatment of Leukoderma with Gold Sodium Thiosulfate, *Arch. Dermat & Syph.* **20**:22 [July] 1929) has been used in some of these cases. Its use, however, has produced variable results in different hands.

### ETHYL ACETATE AS INDUSTRIAL HAZARD

*To the Editor:*—I have recently received a communication stating that an industrial concern has started using ethyl acetate (acetic ether) in one of its production lines to dissolve the surface of a cellulose lens. This is done for the purpose of making the lens adhere to a metal surface. The fumes are very strong and the question is whether fumes from ethyl acetate when applied to a cellulose lens are harmful to the operators performing the work. MERRILL S. DAVIS, M.D., Marion, Ind.

ANSWER.—Ethyl acetate ($C_6O_2H_{12}$) is relatively unimportant as a toxic agent. This substance is widely used as a constituent of lacquers, solvents, thinners and other coating materials. Skin contact has led to occupational dermatitis, and its vapors are known to be a minor irritant to the eyes and the respiratory tract. This agent has been investigated by H. F. Smyth and H. F. Smyth Jr. (Inhalation Experiments with Certain Lacquer Solvents, *J. Indust. Hyg.* **10**:261 [Oct.] 1928). From their animal experiments no evidence developed indicative of marked toxic properties. It is believed that ethyl acetate is scarcely more culpable as a dangerous industrial material than is the more widely used amyl acetate—"banana oil." If arbitrarily the toxicity of benzene is fixed at 100, the order of toxicity of ethyl acetate may be associated with the figure of 10. Ethyl acetate is not extensively used as a single solvent or a thinner but more often is found as one of several constituents in coating materials. In the instance mentioned in the query, due inquiry should establish that ethyl acetate alone is used. If employed along with benzene and toluene, these other agents are to be regarded with greater apprehension as sources of harm to exposed workers. If in fact ethyl acetate is used as the sole agent, and as a substitute for the more toxic hydrocarbons, this procedure is to be commended. Nevertheless, apart from toxic properties, the discomforting effects of these vapors may be such as to warrant general ventilation.

### PERSISTENT SUBNORMAL TEMPERATURE

*To the Editor:*—What conditions would cause a persistent subnormal temperature of 97 to 98 F., with a slow pulse of from 55 to 65? The patient suffers from marked constipation and has nightly dreams of holdups and murders. His blood pressure is 120 systolic, 90 diastolic. The patient is 48 years old, 5 feet 10 inches (178 cm.) tall and weighs 192 pounds (87 Kg.). He has a good appetite and is physically in excellent shape except that at times he tires easily. The heart, kidneys and lungs are normal. He looks very healthy. Please omit name.

M.D., California.

ANSWER.—An electrocardiographic study and determination of the basal metabolic rate should be undertaken. If both of these are normal, the subnormal temperature and slow pulse can probably be accepted as simple variations from the normal, in view of the statements about the general health of the patient. H. A. Reimann (Habitual Hyperthermia, *Arch. Int. Med.* **55**: 792 [May] 1935) has shown that approximately 10 per cent of the normal population has a body temperature less than 98 F. Bradycardia is not uncommonly noted in individuals without any apparent disease. The very slight possibility of hypoglycemia (Ormond, A. P.: Bradycardia Due to Spontaneous Hypoglycemia, THE JOURNAL, May 16, 1936, p. 1726) may be considered.

### SALIVATION WITH DENTURES

*To the Editor:*—Please send me information for treatment of excessive salivation due to false teeth. Please omit name. M.D., Illinois.

ANSWER.—Excessive salivation after the placing of dentures is not uncommon. It may have a reflex origin from irritation of the denture or it may be purely psychologic. First, the denture should be carefully examined to determine that there are no technical defects. It should be specially noted, first, that the periphery of the denture is not improperly placed; secondly, that there are no areas of excessive pressure on the mucous membrane; thirdly, that the occlusal plane is properly placed. The improper placing of the occlusal plane, that is, the opening of the bite, will cause disturbances in the tension of the muscles of mastication and abnormal relations in the temporal mandibular articulation, either of which may cause reflexes affecting the flow of saliva.

Probably the commonest cause is purely this: The consciousness of the dentures in the mouth and the adjustment to the new dentures excite the flow of saliva. The best treatment is the use of a mild sedative, such as medium doses of potassium bromide. Small doses of atropine for a very short time are sometimes effective.

It should of course be determined that there is no other cause for the salivation.

### PSYCHIATRIC DEFINITIONS

*To the Editor:*—Please define, for psychiatric purposes, level, mood, sensorium, insight, judgment, and stream of talk.

WILLIAM J. O'DONNELL, M.D., Buffalo.

ANSWER.—Level: The sphere in which a tendency expresses itself, particularly with relation to development toward (*a*) consciousness and (*b*) adult activity.

Mood: A moderate emotion of relatively long duration caused by an unconscious tendency which colors conscious impressions.

Sensorium: The group of sensory receptors and their pathways to conscious and subconscious cortical centers.

Insight: Conscious intellectual and emotional understanding.

Judgment: The capacity to arrive at a view by relating ideas or situations through a process of reasoning.

Stream of talk: The verbal productivity of the patient (characterized as to such traits as rate, coherence or content).

### COMBINED INFECTION OF THROAT

*To the Editor:*—I have recently treated a severe case of throat infection in which there was a superficial ulceration of both tonsils, which were covered with a gray filmy looking exudate from which hemolytic streptococci were recovered. There was marked adenitis and peritonsillar edema. The uvula was markedly edematous. A competent throat specialist was called in consultation and an incision was made into the edematous peritonsillar tissue, but no pus was obtained. A smear was taken at the same time, which showed the presence of Vincent's organisms. The next day the patient appeared better and was able to swallow without much difficulty. However, the consultant administered 5 cc. of 1 per cent solution of antimony and potassium tartrate, intravenously, which was subsequently repeated twice. It was felt by the consultant that this treatment was specific for Vincent's infection. I have been unable to find anything in the literature concerning this treatment and am wondering if you can give me any information as to its rationale. My impression was that the major part of the picture was produced by the presence of the streptococcic infection and that the Vincent organisms probably played a minor part. Kindly omit name. M.D., Virginia.

ANSWER.—Some additional information concerning the case described might be obtained through a report of the blood picture present. It may be that the correspondent is right in his impression that the major part of the picture was produced by the streptococcic infection, particularly as the importance of Vincent's organism in the production of disease is not clear at present.

Antimony has been used in a number of difficult infections and is reported to be of particular value in granuloma inguinale, which is thought by some to be due to a filtrable virus.

### HUMIDIFICATION AND CLIMATE IN SINUS DISEASE

*To the Editor:*—There seems to be considerable confusion about the harmfulness of the lack of proper room humidification in sinus and bronchitic conditions. Both the steam kettle and the more modern electric humidifier are recommended to increase the water content of the air for these conditions, in spite of the fact that nearly all physicians recommend the dry climate of the Southwest, where the air humidity compares with that of the average unhumidified apartment in New York in the winter time. I would like very much to get an authoritative opinion on this inconsistency. Please omit name. M.D., New York.

ANSWER.—Fundamental differences exist between the atmospheric conditions of the Southwest and of the larger Northern cities. While the atmosphere is termed that of a "dry climate," there is an appreciable amount of humidity in its air. The sunlight, however, is unfiltered by the usual pall of smoke and soot screen. This and the gentler temperature ranges with other fundamental factors are the determinants in selecting the Southwest as a more suitable climate for those afflicted with "sinus" and "bronchitic" conditions.

Obviously the unfortunates afflicted cannot all avail themselves of a sojourn in the recommended region. Hence the use of the steam kettle or the modern electric humidifier to increase the water content of the air is the alternative.

When the air which this type of patient inhales is properly humidified, there is less crust formation, and the secretions become softened and moistened, and are more easily removed from the air passages by the patient.

Thus it is seen that there is no actual inconsistency in recommending a change of climate to that of the Southwest, and advising that the air of the room habitually used by the patient be humidified for those who are compelled to stay at home.

### TRAUMATIC DISABILITY OF NOSE

*To the Editor:*—I should like information on traumatic disability of the nose. I would particularly like to know the ways and means of estimating disability due to various traumas. I have a complete library on the nose but cannot find this subject.

JOSEPH J. GRIMM, M.D., South Milwaukee, Wis.

ANSWER.—Trauma to the nose may result in disability arising from deformity of the nasal septum by (1) obstruction to respiration, (2) interference with the drainage from the sinuses with resulting stasis and infection of one or more sinuses, and (3) obstruction to the olfactory portion of the nose resulting in the loss of the sense of smell. The disability arising from any of these conditions can be estimated only individually by the inconvenience occasioned.

### MONGOLIAN IDIOCY

*To the Editor:*—I have been treating a family whose first child was a mongolian idiot, living only a few days. They are naturally fearful of having another child. Can you give me some statistics as to the possibilities of similar trouble with another child? Both parents have average inheritance, are in good health and there is no history of alcoholism. Please omit name.

M.D., Nebraska.

ANSWER.—Most careful observers of mongolian mental defectives have been of the belief that this condition occurs but once in a family. One reliable observer lists 322 cases with never a repetition in the same family. There have been a few cases reported in the literature of two or even more with this condition occurring in siblings. The prognosis, therefore, that the next child in the present family would not be a mongolian mental defective is extremely good.

### HAGEDORN-JENSEN METHOD FOR SUGAR DETERMINATION

*To the Editor:*—In Queries and Minor Notes in the Oct. 24, 1936, issue of THE JOURNAL, the reply to Dr. Lewis's request for a description of the Hagedorn-Jensen method for blood sugar determination includes standardization of the two hundredth normal thiosulfate solution.

As standardization of the thiosulfate solution involves the use of an oxidizing agent, I feel that there is an error in the use of two hundredth normal potassium iodide solution for this standardization. I would suggest the use of the word "iodate" for "iodide."

Gradwohl's book "Clinical Laboratory Methods and Diagnosis" also gives a standard potassium iodide solution for titration of the two hundredth normal thiosulfate solution.

My personal experience has been that the actual test and blank titrations work correctly but that the standardization of the two hundredth normal thiosulfate solution with a standard potassium iodide solution is not possible.

ETTA SELSAM, M.D., Terre Haute, Ind.

### CLOSED FONTANELS

*To the Editor:*—In THE JOURNAL, October 31, in Queries and Minor Notes there is a question concerning the early closure of the fontanels. About twelve years ago I delivered an infant that was normal in every way except that the fontanels were completely closed and the skull appeared to be as firm and solid as an adult's. Being greatly concerned about the baby's future development, I called in a well known brain specialist, who gave a very grave prognosis indeed.

I have recently seen the child again and was pleased to note that he had developed normally in every way. His head is of average size but has a peculiar shape. The cranium is narrow and the forehead, instead of being flat or curving, is roughly wedge shaped. However, the mother claims that this is a family characteristic.

EDITH E. JOHNSON, M.D., Palo Alto, Calif.

### CARE OF COLLODION

*To the Editor:*—After occasionally finding a bottle of collodion dried up when I wanted to use it, I discovered a method of preventing this annoyance. Collodion can be kept in perfect condition indefinitely by the simple procedure of inverting the bottle for a second or two each time the cork is replaced. This allows the collodion to run into the neck of the bottle and form a film on and around the under side of the cork. This prevents evaporation.

WALTER J. ROBBINS, M.D., New Britain, Conn.

# *Medical Examinations and Licensure*

## COMING EXAMINATIONS

### STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 29-July 1. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 2. Sec., Dr. W. W. Council, Juneau.

ARIZONA: Phoenix, Jan. 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

COLORADO: Denver, Jan. 5. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Feb. 13. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: Washington, Jan. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

IDAHO: Boise, April 6. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, Jan. 26-28. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 22-24. Sec., Board of Medical Registration and Examination, Dr. William R. Davidson, 301 State House, Indianapolis.

IOWA: *Basic Science.* Des Moines, Jan. 12. Sec., Prof. Edward A. Benbrook, Iowa State College, Ames.

MICHIGAN: Ann Arbor and Detroit, June 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Jan. 5-6. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Jan. 19-21. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MONTANA: Helena, April 6. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEBRASKA: *Basic Science.* Omaha, Jan. 12-13. Director, Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: *Reciprocity.* Carson City, Feb. 1. Sec., Dr. John E. Worden, Carson City.

NEW HAMPSHIRE: Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW JERSEY: Trenton, June 15-16. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April 12-13. Sec., Dr. Le Grand Ward, Box 693, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 5-8. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OREGON: Portland, Jan. 5-7. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 5-9. Sec., Board of Medical Education and Licensure, Mr. James A. Newpher, Education Bldg., Harrisburg.

PUERTO RICO: San Juan, March 2. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Jan. 7-8. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 19-20. Dir., Division of Medical Licensure, Dr. B. A. Dyar, Pierre.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

WASHINGTON: *Basic Science.* Seattle, Jan. 7-8. *Medical.* Seattle, Jan. 11-13. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

WEST VIRGINIA: Charleston, March 1. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: Madison, Jan. 12-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Feb. 1. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Feb. 9-11, May 10-12, June 21-23, and Sept. 13-15. *Part III.* New York, Jan. 11-13 and Chicago, Jan. 19-21. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

### SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Written examination for Group B applicants* will be held in various cities throughout the country, April 17. *Oral examinations for Group A and B applicants* will be given in Philadelphia, June 7-8. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written* examination will be held simultaneously in different centers of the United States and Canada on December 14 and in March. *Practical* examination will be given in St. Louis in April and at Philadelphia in June. Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Rm. 1210, Des Moines.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the United States and Canada, March 6. *Practical, oral and clinical examinations for Group A and B applicants* will be held at Atlantic City, N. J., June 7-8. *Applications must be received at least sixty days prior to the examination dates.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Los Angeles, Jan. 23. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Cleveland, Jan. 9. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Philadelphia, June 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 29-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, June 4-6. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester.

## California July Examination at San Francisco

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports the written examination held at San Francisco, July 7-9, 1936. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and fifty-three candidates were examined, 147 of whom passed and 6 failed. The following schools were represented:

| School | PASSED | Year Grad. | Per Cent |
|---|---|---|---|
| College of Medical Evangelists | | (1936) | 78.1, 81.4, 82.2, 82.6, 83.8, 84.1, 84.4, 85.4, 85.4, 85.7, 85.9, 86.3, 90.7 |
| Stanford University School of Medicine | | (1934) 83.1, (1935) (1936) | 75.7, 76.3, 77.1, 77.1, 77.6, 79.2, 79.2, 79.2, 80.8, 81, 81.1, 81.7, 81.7, 81.8, 82.2, 82.2, 82.7, 83, 84, 84.1, 84.1, 84.2, 84.6, 84.7, 84.7, 84.9, 85, 85.8, 87, 87.7, 88, 88.3, 89.3, 90.3 |
| University of California Medical School | | (1933) (1934) | 84.6, (1936) 75.7, 77.2, 78.2, 79.3, 80.6, 80.8, 80.8, 80.9, 81, 81.8, 81.8, 81.8, 81.9, 82.2, 82.6, 82.6, 82.8, 83.1, 83.1, 83.3, 83.4, 83.4, 83.7, 83.9, 83.9, 84.3, 84.3, 84.4, 84.6, 84.7, 84.9, 84.9, 85.2, 85.3, 86.2, 86.3, 86.3, 86.7, 86.8, 86.8, 87.3, 87.7, 89.1, 89.3 |
| University of Southern California School of Medicine | | (1936) | 79.1, 80.4, 82, 83.4, 83.9, 85.1, 85.6 |
| Yale University School of Medicine | | (1932) 75.4, (1935) | 81.1 |
| George Washington University School of Medicine | | (1935) | 82.6 |
| Loyola University School of Medicine | | (1936) | 78.6, 79.1 |
| Northwestern Univ. Medical School | | (1935) 77.1, (1936) | 82.4, 84.1, 87 |
| Rush Medical College | | (1935) 79.9, (1936) | 82.8, 86.2, 88.6 |
| University of Illinois College of Medicine | | (1935) 80.8, (1936) | 77 |
| State Univ. of Iowa College of Medicine | | (1931) 78.6, (1933) | 83.2 |
| University of Louisville School of Medicine | | (1935) | 81 |
| University of Maryland School of Medicine and College of Physicians and Surgeons | | (1934) | 81.7 |
| Harvard University Medical School | | (1932) 85, (1934) | 83.6 |
| Washington University School of Medicine | | (1936) | 81.1 |
| Creighton University School of Medicine | | (1935) | 77.3, 78.8, 81.2, 83.6, (1936) 77.8, 78.1, 78.8, 79.8, 83.6 |
| Univ. of Nebraska College of Medicine | | (1934) 82.3, (1935) | 79.3 |
| Columbia Univ. College of Physicians and Surgeons | | (1936) | 78.6 |
| Cornell University Medical College | | (1935) | 75.7 |
| Univ. of Rochester School of Medicine | | (1934) 80.3, (1935) | 76.8 |
| University of Oklahoma School of Medicine | | (1935) | 78.9 |
| Hahnemann Med. College and Hospital of Philadelphia | | (1935) | 88.6 |
| Vanderbilt University School of Medicine | | (1935) | 79.7 |
| Baylor University College of Medicine | | (1936) | 78.3 |
| University of Texas School of Medicine | | (1935) | 82.7 |
| University of Wisconsin Medical School | | (1933) | 87.7 |
| University of Toronto Faculty of Medicine | | (1933) | 82.6 |
| Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin | | (1929) | 78.4* |
| Hamburgische Universität Medizinische Fakultät | | (1925) | 75.7* |

| School | FAILED | Year Grad. | Per Cent |
|---|---|---|---|
| Stanford University School of Medicine | | (1936) | 59.1, 73.4 |
| University of California Medical School | | (1936) | 72.3, 73.3 |
| State University of Iowa College of Medicine | | (1935) | 77.7† |
| Marquette University School of Medicine | | (1936) | 72.6 |

* Verification of graduation in process.
† Fell below 60 per cent in two subjects.

## California July Examination at Los Angeles

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports the written examination held at Los Angeles, July 21-23, 1936. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and thirteen candidates were examined, 101 of whom passed and 12 failed. The following schools were represented:

| School | PASSED | Year Grad. | Per Cent |
|---|---|---|---|
| College of Medical Evangelists | | (1935) | 77.2, 84, (1936) 76.4, 77.9, 77.9, 78.1, 78.4, 79.7, 80.6, 80.6, 80.7, 81.3, 81.3, 82, 82.2, 82.2, 82.2, 82.4, 82.4, 83.1, 83.4, 83.7, 84.3, 84.3, 86, 86.8, 86.9, 87.1, 87.9 |
| Stanford University School of Medicine | | (1936) | 83 |
| University of California Medical School | | (1933) (1936) | 86.2, 83, 84.9, 86.2 |
| University of Southern California School of Medicine | | (1935) (1936) | 78.8, 76.2, 76.9, 79.2, 79.8, 80, 80, 80, 81, 82.2, 83.4, 84.1, 84.3, 84.9, 84.9, 86.8, 87.1, 88, 88.1 |
| Loyola University School of Medicine | | (1936) | 80.1 |
| Northwestern University Medical School | | (1933) (1936) | 80.8, 81.2, 83,* 83.2* |
| Rush Medical College | | (1936) | 76.1, 78.4, 78.8, 79.1, 79.1, 79.2, 80.6, 81, 81.2, 82.7, 83.7, 83.7, 84.6, 84.7, 84.8, 89 |
| School of Medicine of the Division of the Biological Sciences | | (1936) | 81.7 |
| University of Illinois College of Medicine | | (1936) | 79.7, 83.3, 84.9, 87.1 |
| State University of Iowa College of Medicine | | (1935) | 82.2 |
| Johns Hopkins University School of Medicine | | (1935) | 79 |
| University of Maryland School of Medicine and College of Physicians and Surgeons | | (1935) | 86.3 |
| Tufts College Medical School | | (1934) | 84.4 |
| University of Michigan Medical School | | (1935) | 78.3, 82.9 |
| University of Minnesota Medical School | | (1936) | 75.4 |
| Washington University School of Medicine | | (1931) | 82.3 |
| Creighton University School of Medicine | | (1935) (1936) | 85.8, 79.7 |
| University of Nebraska College of Medicine | | (1934) (1935) | 79.6, 83.1, (1936) 81.3 |
| Columbia Univ. College of Physicians and Surgeons | | (1935) | 80.7 |
| University of Oregon Medical School | | (1934) | 80.4 |
| University of Pennsylvania School of Medicine | | (1936) | 84.4 |
| Woman's Medical College of Pennsylvania | | (1935) | 80.2 |
| Baylor University College of Medicine | | (1932) 78.9, (1936) | 78, 83.8 |
| Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England | | (1935) | 80† |
| Regia Università degli Studi di Modena. Facoltà di Medicina e Chirurgia | | (1932) | 75 |

| School | FAILED | Year Grad. | Per Cent |
|---|---|---|---|
| College of Medical Evangelists | | (1936) | 71.7, 74.2, 74.8, 74.9 |
| American Medical Missionary College, Chicago | | (1902) | 65.9 |
| Loyola University School of Medicine | | (1936) | 67 |
| Rush Medical College | | (1936) | 73 |
| Creighton University School of Medicine | | (1935) 72.4, (1936) | 72 |
| Western Reserve University School of Medicine | | (1935) | 74.1 |
| Meharry Medical College | | (1934) | 74.1 |
| Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia | | (1926) | 74 |

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.
† Verification of graduation in process. License has not been issued.

## Arizona July Examination

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports the written examination held in Phoenix, July 7-8, 1936. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Six candidates were examined, 3 of whom passed and 3 failed. Thirteen physicians were licensed by reciprocity and 2 physicians were licensed by endorsement. The following schools were represented:

| School | PASSED | Year Grad. | Per Cent |
|---|---|---|---|
| University of Minnesota Medical School | | (1932) | 76.4 |
| University of Nebraska College of Medicine | | (1934) | 75.3 |
| University of Tennessee College of Medicine | | (1935) | 75.2 |

| School | FAILED | Year Grad. | Per Cent |
|---|---|---|---|
| University of Arkansas School of Medicine | | (1935) | 73.3 |
| College of Medical Evangelists | | (1936) | 63.1 |
| School of Medicine of the Division of the Biological Sciences | | (1936) | 71.1 |

| School | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| University of California Medical School | | (1928), (1933) | California |
| George Washington University School of Medicine | | (1916) | Dist. Colum. |
| Chicago College of Medicine and Surgery | | (1917) | Illinois |
| Rush Medical College | | (1902) | Wisconsin, (1934) Illinois |
| University of Kansas School of Medicine | | (1933) | Kansas |
| Tulane University of Louisiana Medical Department | | (1908) | Louisiana |
| University of Michigan Medical School | | (1932) | California |
| Washington University School of Medicine | | (1932) | Missouri |
| Western Reserve University School of Medicine | | (1918) | Ohio |
| Medical College of the State of South Carolina | | (1933) | S. Carolina |
| University of Nashville Medical Department | | (1898) | Texas |

| School | LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|---|---|---|
| College of Medical Evangelists | | (1935, 2) | N. B. M. Ex. |

## Oklahoma June Report

Dr. James D. Osborn Jr., secretary, Oklahoma State Board of Medical Examiners, reports the written examination held in Oklahoma City, June 10-11, 1936. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Seventy candidates were examined, all of whom passed. Fourteen physicians were licensed by reciprocity. The following schools were represented:

| School | PASSED | Year Grad. | Per Cent |
|---|---|---|---|
| University of Colorado School of Medicine | | (1934) | 85 |
| Northwestern University Medical School | | (1936) | 82, 83, 85 |
| Tulane University of Louisiana School of Medicine | | (1935) | 88 |
| University of Michigan Medical School | | (1935) | 84 |
| Washington University School of Medicine | | (1931) | 88 |
| University of Oklahoma School of Medicine | | (1936) | 77,* 81,* 81,* 81,* 82,* 82,* 82,* 82,* 82,* 82,* 82,* 83,* 83,* 83,* 83,* 83,* 83,* 83,* 83,* 83,* 83,* 83,* 83,* 84,* 84,* 84,* 84,* 84,* 84,* 84,* 85,* 85,* 85,* 85,* 85,* 85,* 85,* 85,* 85,* 85.5,* 85.5,* 86,* 86,* 86,* 86,* 86,* 86,* 87,* 87,* 87,* 88,* 88,* 89,* 94* |
| Jefferson Medical College of Philadelphia | | (1934) | 84 |
| Baylor University College of Medicine | | (1933) 86, (1936) | 85* |

| | | |
|---|---|---|
| University of Wisconsin Medical School | (1935) | 82 |
| Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau | (1925) | 89† |

LICENSED BY RECIPROCITY

| School | Year Grad. | Reciprocity with |
|---|---|---|
| University of Arkansas School of Medicine | (1929) | Arkansas |
| Emory University School of Medicine | (1924) | Alabama |
| Indiana University School of Medicine | (1926) | Indiana |
| University of Louisville School of Medicine | (1929) | Kentucky |
| Tulane University of Louisiana School of Medicine | (1925) | Texas |
| Minneapolis College of Physicians and Surgeons | (1909) | Minnesota |
| Washington University School of Medicine | (1930) | Louisiana, Missouri |
| Ohio State University College of Medicine | (1930) | Ohio |
| Hahnemann Medical College and Hosp. of Philadelphia | (1906) | Ohio |
| University of Tennessee College of Medicine | (1928), (1931) | Tennessee |
| Vanderbilt University School of Medicine | (1929) | Tennessee |
| Baylor University College of Medicine | (1923) | Texas |

* License will be issued on completion of internship.

† Granted a temporary permit and will receive a license when United States citizenship is completed. Verification of graduation in process.

# Book Notices

**A Preface to Nervous Disease.** By Stanley Cobb, A.B., M.D., Bullard Professor of Neuropathology, Harvard Medical School. Cloth. Price, $2.50. Pp. 173, with 13 illustrations. Baltimore: William Wood & Company, 1936.

This is an excellent treatise written by an able neuropsychiatrist, who briefly discusses facts and correlations that are necessary in order to understand the simpler workings of the central nervous system. Anatomic, physiologic and pathologic data are closely correlated and the reader gets only the known and proved facts. The book is divided into twelve chapters, the autonomic nervous system, the cerebrospinal nervous system, motor integration and locomotion, functional localization in the cerebral cortex, consciousness and the "mind-body" problem, the cerebral circulation, the cerebrospinal fluid, paths of infection to the nervous system, general histologic pathology, the peripheral nerves and neuritis, special histologic pathology, and epilepsy and the psychoses. The author illustrates the relationship between psychiatry and certain other sciences. Psychiatry is represented as a pyramid, its apex being philosophy and its base physics, chemistry and anatomy. Above the latter three named are physiology, neurology and experimental psychology. Between these and the apex (philosophy) there exists a space which at present is a void and which requires intensive research in the future in order that facts may be found to explain the observations and to support satisfactorily the theories now being discussed in psychiatry and psychology. The bibliography, unfortunately, is brief. The book is recommended to all neuropsychiatrists.

**Handbuch der experimentellen Pharmakologie.** Begründet von A. Heffter. Ergänzungswerk. Herausgegeben von W. Heubner, Professor der Pharmakologie an der Universität Berlin, und J. Schüller, Professor der Pharmakologie an der Universität Köln. Band II: Narkotica der Fettreihe. Von M. Kochmann. Paper. Price, 36 marks. Pp. 283, with 29 illustrations. Berlin: Julius Springer, 1936.

This supplement is intended to bring down to date the chapter on "Narcotics of the Fatty Series" of volume 1 of the "Handbuch der experimentellen Pharmakologie." Kochmann summarizes the present status of anesthetics as follows: Chloroform, on account of its intrinsic dangers, is being largely abandoned. Ether is preferred, but not by itself. It is used in combination with other narcotics ("mixed narcotics"). "Prenarcosis" is the term to be applied to the use of a narcotic to make easier the induction of anesthesia, while a "basis narcotic" is one that carries the main burden of an anesthesia, to be completed by a more controllable anesthetic. Kochmann believes that ether as well as local anesthesia is likely to become largely displaced by the gases and by briefly acting intravenous anesthetics. There are intrinsic reasons why the gas anesthetics are safer than ether or chloroform. The latter must be administered at the beginning in toxic concentration, because of their slowness in inducing anesthesia. Gas anesthetics may be given in safe concentration from the beginning, because of the promptness with which they act. This is due to the relative insolubility of the gas, as compared with relative solubility of ether or chloroform. Narcosis occurs in spite of this relative insolubility because of the high partial pressure of the gas that can and must be maintained in the lungs. The highest gas concentration that can be maintained at atmospheric pressure in the lungs with acetylene, ethylene or nitrous oxide is below the fatal limit. That is why they are so safe. It seems that ethylene is the preferred gas in America, while acetylene is preferred in Europe. The latter is much less expensive. There are other factors that make these gases safer. Postanesthetic bronchopneumonia raises the ether or chloroform mortality rate to from 3 to 5 per thousand. The explosion mortality rate of ethylene can be reduced to 1 per hundred thousand, while postanesthesia complications are absent. An experimentally demonstrable therapeutic potentiation occurs with barbiturate basis narcotics and the inhalation anesthetics, as well as between barbiturates and the local anesthetics. The author discusses Cloetta's demonstration of a "sleep steering center," located in the base of the brain and in front of the aqueduct of Sylvius, which induces sleep under the influence of calcium excess and wakefulness under the action of potassium excess, the calcium lessening cell permeability while potassium increases it. A sensitization of the center to the calcium action is required for the production of sleep, and this occurs through modification of the center to favor calcium accumulation, which is affected by fatigue products as well as by hypnotics. These examples might suffice to give some indication of the wealth of new material contained in this supplement.

**A Text-Book of Histology Arranged upon an Embryological Basis.** By J. Lewis Bremer, M.D., Hersey Professor of Anatomy, Harvard University. Fifth edition of "Lewis and Stöhr." Fabrikoid. Price, $6.50. Pp. 580, with 455 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1936.

Much of the modern histologic investigation consists of attempts to correlate cellular structure and function. The vast amount of work in the fields of endocrinology and of secretions of glands in general, the influence of recent experimental embryology, and the introduction of new experimental methods in histology have all served to move histology from the static, purely descriptive position which it occupied for many years to a place among the most active and progressive of the medical sciences. This change in the scope of histology is reflected in the present extensive revision of this well known book. Although it still presents histology primarily from the embryologic point of view, this edition differs from previous ones in containing much physiologic information. The most extensive changes and additions are in the descriptions of the endocrine glands, the kidneys, the teeth, and blood formation. There are many new illustrations. The photomicrographs of dental structure are particularly demonstrative. Controversial matter has been presented in such a fashion that the opposing views are readily grasped by the student. Perhaps the main unfavorable criticism which might be directed toward it is that it is slightly oversimplified; and oversimplification, of necessity, often leads to slight inaccuracies. Of this the author was obviously aware, for he has sought to overcome this deficiency by the incorporation of many new references, which were selected to a large extent on the basis of availability to American medical students. As the author states in the preface, "even slight familiarity with the literature will disclose the active vitality of modern anatomical science." With this revision Professor Bremer has succeeded in making his book a clear presentation of modern histology for medical students.

**Investigations on Respiratory Dust Disease in Operatives in the Cotton Industry.** By C. Prausnitz. Medical Research Council, Special Report Series, No. 212. Paper. Price, 2s. 6d Pp. 73, with 26 illustrations. London: His Majesty's Stationery Office, 1936.

A few decades ago the terms "byssinosis" and "byssophthisis" found their way with fair frequency into discussions of dusty lung diseases. The concept then was that cotton dusts produce in workers a lung disease analogous to silicosis. Greater experience has proved that little is shared in common by cotton and silica dusts. Nevertheless, morbidity statistics continually present an abnormal incidence of pulmonary diseases among cotton workers. Tuberculosis, bronchitis and asthma stigmatize these mill workers. In the United States a satisfying but perhaps erroneous explanation was found in the cotton worker's low standards of living, his poor housing, low wages, fatigue producing work, and high humidity in work rooms. In England, physicians and hygienists have persisted in the belief that cotton dust itself or some component is the direct source of

"mill fever" and remotely the source of more severe disorders. At one time histamine, a constituent of cotton dust, was marked with suspicion as the cause of mill workers' lung diseases. In fact, histamine may play some part but is not the exclusive agent responsible. This English book provides an admirable presentation of the entire problem of respiratory disease among cotton operatives. The chief new material deals with extensive experiments on man and animals applying various extractives of cotton. In the protein fraction there has been found a substance believed to be the specific cause of mill intoxications. This substance acts chiefly as a sensitizing agent but in addition appears to possess direct irritant properties so that, even in the absence of allergic states, damage may arise. Injury from cotton dust is reported as not limited to the respiratory tract. Marked changes are reported as occurring in the adrenals. The contents of this small book are presented in four major divisions, on the chemistry and physics of cotton dust, experimental investigations, clinical and physiologic observations and diagnosis, treatment and prevention. In the last section it is recorded that desensitization is not effective at this time and that no treatment is of specific worth. Stress is placed on the prevention of these diseases through the elimination of dust in the cotton mill atmosphere. Since American cotton proved to contain just as much toxic material as batches from other portions of the world, no reason prompts the belief that American operatives may be free from this occupational disorder. This book should become the possession of physicians working in the cotton textile areas of this country, as well as industrial physicians and hygienists everywhere.

**Gynecology for Nurses.** By Harry Sturgeon Crossen, M.D., Gynecologist to Barnes Hospital, St. Louis Maternity Hospital, and St. Luke's Hospital, and Robert James Crossen, M.D., Instructor in Clinical Gynecology and Obstetrics, Washington University School of Medicine. Second edition. Cloth. Price, $2.50. Pp. 316, with 365 illustrations. St. Louis: C. V. Mosby Company, 1936.

The excellent features of the first edition, namely, good illustrations, careful proportion of subject matter, simple exposition, and minute attention to details, are embodied in the second edition of this manual, which has now been brought down to date by the inclusion of sections on endocrinology and references to newer therapeutic measures, such as the Elliott treatment. The aim of the work is to provide the student nurse, the supervising nurse, the operating room nurse or the office nurse with sufficient knowledge of gynecology for the proper understanding of her work and, further, to provide her with detailed instruction in gynecologic nursing technic. This design has been admirably fulfilled. The personal views of the authors, which are of especial interest to the experienced surgeon or nurse, may limit somewhat the general acceptance of the volume as a textbook, since every hospital is inclined to teach its student nurses its own technic. Nevertheless, supervisors of nurses and private duty nurses will find the book of great reference value. Those accustomed to the authors' style will not think the new volume poorly written.

**Alimentación de niños. Métodos de México.** Por el Dr. Juan M. González. Cloth. Pp. 718, with illustrations. Mexico, D. F.: The Author, 1936.

This book, in Spanish, is on the methods used in feeding Mexican infants. The first 170 pages deals with the weight and body measurements of Mexican children, breast feeding and the feeding of premature infants. The average Mexican child weighs 3,300 Gm. at birth and is 51 cm. long. It weighs 7,200 Gm. at 6 months and 9,350 Gm. at 1 year. It can therefore be seen that, whatever their type of feeding may be, these infants quite compare in body build with infants in this country. Breast feeding is advocated, and considerable space is given to reasons and to technic. The author prefers a three hour interval, but only five feedings in twenty-four hours. Much attention is given to manual expression and the Abt pump. His regimen for premature infants is quite like ours, and he advocates breast milk for their feeding.

The second part of the book deals with artificial foods. Cow's milk is preferred. The Holando-Mexicane breed of cattle produces the best milk for infant feeding, as the fat globule is almost the same size as human milk. Milk should be pasteurized or home boiled. Next in preference are acid milks or banana milk (made by emulsifying a ripe banana in 0.5 liter of milk). Vitamin C is furnished in fruits, and sunshine gives vitamin D. The other vitamins the author states are furnished in the ordinary diet. The fortunate Mexican mother therefore does not have to listen to vitamin propaganda.

Probably the most interesting section of the book is that dealing with artificial feeding. The artificially fed baby receives seven milk feedings a day until 3 months of age and six feedings a day to 10 months. Cooked apple is added at 7 months and banana and other fruits and vegetables at from 7 to 10 months. At 1 year the Mexican baby has four milk feedings, fruit, vegetable and egg yolk. Bread is added at 18 months, and at 2 years a soup made of meat and egg. The preschool child has four meals a day of milk, soup, egg, meat, bread, vegetable and corn meal pancake. These meals are at 8, 12, 4 and 7 o'clock.

The final part discusses digestive disturbances. Finkelstein's classification is used, and the treatment is quite like ours. Chapters are devoted to intravenous dextrose therapy and blood transfusions.

The book is well written and intensely interesting. The physician who wishes to learn of the feeding methods used in other countries will profit by reading this. It is so beautifully done and so profusely illustrated that the fact that it is written in Spanish should be no handicap.

**Principles and Practice of Recreational Therapy for the Mentally Ill.** By John Eisele Davis, B.A., M.A., Senior Physical Director, Veterans Administration Facility, Perry Point, Maryland. In collaboration with Dr. William Rush Dunton, Jr., Instructor in Psychiatry, The Johns Hopkins University. Cloth. Price, $3. Pp. 206. New York: A. S. Barnes & Company, Incorporated, 1936.

Organized recreation in hospitals for mental disease, used as a form of occupational therapy, is of comparatively recent development. The book at hand appears to be the first of its type and as such is of great interest to all physicians who care for patients with psychoses in hospitals. After an introductory chapter listing the various types of disease usually found in such hospitals, details of recreational activities are given which appear to the author to be best suited for patients with such diseases as dementia praecox, encephalitis and paranoia. It is too early to evaluate the effect of such recreational exercises and this the author does not attempt to do. In the final chapter he outlines the aims and objectives of his work, which was largely accomplished in a hospital under the Veterans' Administration. Only when other hospitals have adopted similar programs can the value of this work be estimated. This book, extremely well written, will serve as a basis for the instigation of similar programs in other hospitals.

**Reports on Chronic Rheumatic Diseases. Being the Annual Report of the British Committee on Chronic Rheumatic Diseases Appointed by the Royal College of Physicians.** Edited by C. W. Buckley, M.D., F.R.C.P. Number Two. Cloth. Price, $3.50; 10s. 6d. Pp. 140. New York: Macmillan Company; London: H. K. Lewis & Co., Ltd., 1936.

While the title of this book might lead one to believe that it represents the prevailing opinion of the British Committee on Chronic Rheumatic Diseases, the editor frankly states that "it is not to be assumed that the views expressed . . . are necessarily the views of the British Committee. Their object is to present accounts of clinical and laboratory observation and research which they believe to be of real value, but beyond this, they do not desire to hamper contributors in the expression of their opinions." The volume consists of ten articles by physicians whose names have been identified for a long time with the study of the rheumatism problem. One of the articles giving an excellent cross section of the American concept of the problem was written by Dr. Philip S. Hench of Rochester, Minn. The other nine articles were written by British physicians. The book should appeal particularly to the rapidly increasing group of physicians who are interested in the subject of arthritis. While no specific advance in the knowledge of the disease or its treatment can be gained from reading the book, it contains a wealth of thought-provoking material which in time may be translated into definite progress. The liberal attitude of the committee toward tenable but unproved theories is to be commended and is in line with the thought with reference to arthritis recently expressed editorially in THE JOURNAL; namely, "The only advance has been in the tolerance of most writers for the views of others; this open-mindedness in a field in which nobody knows much is a necessary prerequisite to the acquirement of knowledge."

**Orthopædic Surgery.** By Walter Mercer, M.B., Ch.B., F.R.C.S., Assistant Surgeon, Royal Infirmary, Edinburgh. With a foreword by John Fraser, M.C., M.D., Ch.M., Regius Professor of Clinical Surgery in the University of Edinburgh. Second edition. Cloth. Price, $10. Pp. 906, with 408 illustrations. Baltimore: William Wood & Company, 1936.

The first edition was reviewed in THE JOURNAL Sept. 2, 1933. It was pointed out that the book was an outgrowth of the author's lectures in clinics given under the direction of Professor Fraser and that it reflected the general surgical rather than the orthopedic point of view. In the present edition the author claims to have benefited by the criticisms with which his first edition was received. He has added the more important developments in orthopedic surgery that have appeared since 1933. Several of the sections have been rewritten, including those on pneumococcic arthritis, gonococcic arthritis, hemophilic arthritis, hysterical joints and the muscular dystrophies. There are two new chapters on circulatory disturbances of the extremities and on manipulative surgery. All these additions resulted in 200 additional pages and thirty-seven additional illustrations. Most of the illustrations in the present edition are instructive. However, they would be more instructive if the legends were more explanatory and if there were markings on the illustrations themselves to indicate to students just where the pathologic changes lie.

**Asthma: Aerodynamik und Therapie.** Von Dr. med. Otto Businger. Boards. Price, 3.50 Swiss francs; 2.80 marks. Pp. 68, with 10 illustrations. Berne: Medizinischer Verlag Hans Huber, 1936.

The author expounds his theory of distorted air currents created in the nasal passages as the important etiologic factor in bronchial asthma. He states that normally the middle meatus is the passage through which the main current of air reaches the trachea. The observations have been made by means of (1) direct rhinoscopy with tobacco smoke as a means of visualizing the air currents, (2) animal experiments, (3) the use of models of the human nose, and (4) technical apparatus and calculations. During the asthmatic attack the inferior meatus becomes the main passageway for the air currents, the latter becoming distorted and causing the asthmatic attack. The most important factor in the production of these distorted currents is the inferior turbinate, which becomes bulbous at both ends and constricted in the center. The author's therapy consists of flushing a warm solution of sodium, potassium and calcium salts in neutral solution against the inferior turbinate, the use of gargles, the internal use of calcium salts and expectorants. He advises against the local use of ephedrine and epinephrine. He limits his surgical procedures to the removal of redundant mucosa occasionally found posteriorly on the inferior turbinate, the careful removal of polyps, occasionally submucous needling of the inferior turbinate, and occasionally a submucous septum resection. The cases presented are few and hastily sketched. He takes much for granted and in places his ideas are quite fantastic.

**Die Bekämpfung der eklamptischen Schwangerschaftserkrankungen.** Von Dozent Dr. med. Heinrich Siedentopf, Oberarzt der Universitäts-Frauenklinik zu Leipzig. Paper. Price, 4.50 marks. Pp. 86. Leipzig: Johann Ambrosius Barth, 1936.

In this small monograph the author reviews briefly the present treatment of eclampsia. In that the cause of this obstetric complication is not known, he evaluates the various therapeutic measures that have been used in the large clinics of the world. The prophylactic treatment of eclampsia is probably the most important measure in the therapy of the disease. To this end, good antepartum care is necessary. He thus makes a plea for the widespread use of antepartum care in all obstetric patients.

The author concludes from statistics from his own clinic in Leipzig, as well as from many other representative clinics, that certain principles stand out in the treatment of eclampsia. The disease should be treated in the preeclamptic stage by rest, sedatives and concentrated dextrose solutions and, if the condition fails to improve, the termination of pregnancy is advocated. This can usually be done by the mechanical induction of labor, although cesarean section is occasionally advisable. In the convulsive stage, delivery from below is rarely indicated. Local anesthesia should be used. The residual damage following preeclampsia and eclampsia is properly emphasized. Future pregnancies may be complicated by abortion, stillbirth or abruptio placentae. These sequelae reduce the number of future offspring. The possible decrease in the number of conceptions following toxemias is questionable and theoretical. The high fetal mortality in the toxemias of pregnancy is pointed out. Antepartum care and the general plan for the treatment of the toxemias of pregnancy presented in this book have been in use in most of the large American clinics for many years.

**Operative and Interpretive Radiodontia: A Textbook for Students and Practitioners of Dentistry.** By Walter S. Thompson, D.D.S., Associate Professor of Radiodontia, College of Dentistry, University of Southern California. Cloth. Price, $7. Pp. 374, with 355 illustrations. Philadelphia: Lea & Febiger, 1936.

Intended essentially for dental students and dentists, this volume holds interest also for physicians, particularly roentgenologists. It presents a survey of the principles and practices of dental roentgenography, with particular attention to the mechanical or technical phases of this method. The introductory chapters on the history, the fundamental principles and the dental application of the x-rays are admirably suited to the readers for whom the book was written. The mechanics and technic of radiodontia are presented with exacting, at times redundant, detail. To the dental practitioner this, no doubt, is of great value. Unfortunately there is a corresponding lack of detail in the discussion of the interpretation of the roentgenograms. Only twenty-five pages is devoted to specific diagnosis, and this is presented largely by illustrations of typical roentgenograms of various disease conditions of the mouth and jaws. While the general principles of diagnosis are stressed, there is no effort to detail the points on which specific diagnoses are based or to present any real differential diagnosis. As an introduction to dental roentgenography and as a manual of technic the book is admirable, but it fails to provide an adequate treatment of interpretative radiodontia.

**Amino Acid and Ammonia Metabolism in Liver Diseases.** By Esben Kirk. Paper. Price, 10 Danish kroner. Pp. 147. Copenhagen: Levin & Munksgaard, 1936.

It is shown from the literature and new experiments that the liver is the exclusive site of urea formation and the chief site for the deaminization of amino acids. But a small amount of liver tissue is adequate, so that in cirrhosis of the liver and feeding ammonia, although high blood ammonia values were observed in eighty-two cases, it does not indicate any inadequacy of the liver but may be due to an anastomosis between the portal vein and the vena cava. In acute hepatitis and obstructive jaundice and some other liver diseases there was no abnormal increase in blood ammonia on the feeding of ammonia. Folin's colorimetric method for amino nitrogen determination was shown to give very low values and therefore was discarded. After ingestion of 25 Gm. of aminoacetic acid, amino nitrogen was determined in the blood plasma by the Van Slyke method in twenty-two normal subjects, fifteen cases of acute hepatitis, thirteen of liver cirrhosis and eight of obstructive jaundice. Some variations were observed but were ascribed to retarded absorption of amino acids. In liver disease the fasting amino nitrogen values were found to be within the normal range. Similar results were found with relation to amino nitrogen excretion in the urine, where the determination was made by the modified formol titration. It is suggested that blood ammonia determinations are useful in the diagnosis of cirrhosis of the liver.

**Psychology of Sex: A Manual for Students.** By Havelock Ellis. Cloth. Price, $3. Pp. 377. New York: Emerson Books, Inc., 1935.

The author of this volume is also the author of a seven-volume series called "Studies of the Psychology of Sex." His extensive work is more particularly suited to the use of physicians, psychologists, and those whose professional lives are greatly concerned with the problems considered. The present volume is more nearly a manual for the general student. It sets forth the view of the author that there is no sharp boundary line between normal and abnormal in sex matters. It provides a concise consideration of such topics as sexual deviations, homosexuality, marriage, the art of love, and the dynamic nature of the sex impulse. For the general reader the book is an adequate presentation of the Havelock Ellis views. It makes clear many subjects which have formerly been considered well concerned in mystery. There is an inefficient glossary and a fairly good index.

**Syndromes myo-parathyroïdiens simples ou associés. (Myopathies scléreuses et scléro-hypertrophiques liées à des troubles parathyroïdiens.)** Par André Pergola. Paper. Pp. 88, with 10 illustrations. Paris: Librairie Le François, 1936.

The purpose of this monograph is to prove the relationship between parathyroid disturbances and atrophic myotonia. The author reports in detail seven clinical histories, with some laboratory data as a basis for his contention that these muscular dystrophies are secondary to parathyroid disturbances, supporting the thesis further by some sketchy quotations from the literature. The bibliography is composed of standard references, but some of the best work in this field has been omitted. While the book is interesting and informative in that it records some clinical observations, one is not impressed with the proofs offered. The work is more speculative than inquiring but still is interesting to both the investigator and the specialist. Some of the illustrations are good, others poor, owing to imperfect reproduction.

# Bureau of Legal Medicine and Legislation

## MEDICOLEGAL ABSTRACTS

**Malpractice: Statute of Limitations as Discriminatory Against Osteopaths and Chiropractors.**—In South Dakota, an action against "a physician, surgeon, dentist, hospital or sanitarium for malpractice, error, mistake or failure to cure, whether based on contract or tort" must be brought within two years. The plaintiff sued the defendant, a physician, for malpractice and the lower court held that the action was barred by the two year statute of limitations. The plaintiff appealed to the Supreme Court of South Dakota, contending that the statute was unconstitutional in that it placed physicians and the other named groups in a privileged class and was therefore discriminatory against osteopaths, optometrists, chiropractors, nurses and midwives.

If, said the Supreme Court, the statute does discriminate in favor of physicians and against chiropractors, osteopaths or the other classes referred to by the plaintiff, it is no concern of the plaintiff. He has not brought himself within any of the classes which he alleges are discriminated against and cannot, therefore, raise the question of discrimination against such classes. There was no contention that the statutory two-year period was unreasonable. Furthermore, the statute applies equally to any one having an action against those enumerated therein and the plaintiff was placed in the same position as any other person having a claim against those specified in the statute. The judgment for the defendant was consequently affirmed.—*Petersen v. Hohf (S. D.), 266 N. W. 252.*

**Workmen's Compensation Acts: Death from Diabetes Aggravated by Trauma.**—The worker had diabetes, which had been kept under control for over five years by diet and insulin. In the course of his employment, a truck ran over his right foot and leg, spraining the ankle and inflicting a cut of about 1½ inches in length and going to the bone. He continued to work that day and part of the next day but was unable to work thereafter. The lacerated wound on his leg became infected, the diabetic condition grew worse and twenty-five days after the accident the worker died of "acidosis due to diabetes." His widow, in proceedings under the Missouri workmen's compensation act, was awarded compensation and from a judgment of the circuit court, Jackson county, affirming that award, the employer appealed to the Kansas City court of appeals.

The employer contended that there was no causal connection between the worker's injury and his death. The court of appeals, however, did not agree with that contention. The evidence clearly showed, said the court, that the diabetic condition of the worker was under control prior to the industrial accident, that that control was disturbed because of the infection in the leg, and that it became impossible to reestablish it. As a consequence, the diabetic condition became aggravated and death resulted. Two physicians who attended the worker testified that they made strenuous efforts to reestablish the "balance" in the sugar content of the worker's blood but were unable to do so because of the presence of the infection. Each of these physicians testified that the injury and the resulting infection directly contributed to his death. If, said the court, the industrial accident was a contributing factor to death, it must have been, to the extent it contributed, the cause of death, even if there were other contributing factors or causes. The fact that the worker had diabetes which contributed to his death constitutes no bar, the court said, to the widow's right to compensation, even though without diabetes the injury sustained by the accident would not have been fatal. As was said by the court in *Harder* v. *Thrift Construction Co.* (Mo. App.) 53 S. W. (2d) 34, at page 37:

> Generally speaking, the rule is that the act [the workmen's compensation act] contemplates latent or dormant ailments; that the existence of a disease which does not impair the employee's ability to work will not prevent a recovery if the accidental injury accelerates or aggravates such disease to a degree of disability or of death; and that an actual aggravation of an existing infirmity caused by accident arising out of and in the course of the employment is compensable, even though the particular accident would have produced no such result in the case of a normal and healthy individual.

The court of appeals accordingly affirmed the judgment of the circuit court upholding the award of compensation.—*Tralle v. Chevrolet Motor Co. (Mo.), 92 S. W. (2d) 966.*

**Accident Insurance: Right to Benefits as Affected by Refusal to Submit to Surgical Operation.**—The defendant insurance company promised to pay Sanders certain monthly benefits if he became totally and permanently disabled. Subsequently benefits were paid him when he became totally and permanently disabled because of "fistula and other ailments." Some time later his attending physician recommended that his teeth be extracted, that his tonsils be removed and that he "undergo a surgical operation for fistula." On Sanders' refusal to submit to the suggested procedures, the defendant insurance company declined to make further payments under the policy. He then instituted the present action and recovered judgment, the insurance company appealing to the Supreme Court of Arkansas, contending that Sanders' refusal to submit to the suggested operations relieved it of further liability.

A person is not required, said the Supreme Court, to undergo a major surgical operation against his will for the purpose of freeing another from consequent damages. Even a simple minor surgical operation may be compelled only where a reasonably prudent person would submit thereto. In determining what constitutes reasonable or unreasonable refusal to submit to surgical operations to correct total and permanent disability each case must, of necessity, rest on its peculiar facts and circumstances, and when a jury, as in the present case, has determined this issue on conflicting evidence, its finding is conclusive on appeal.

The Supreme Court accordingly affirmed the judgment in favor of Sanders.—*Aetna Life Ins. Co. v. Sanders (Ark.), 93 S. W. (2d) 141.*

# Society Proceedings

## COMING MEETINGS

American Academy of Orthopedic Surgeons, Cleveland, Jan. 11-13. Dr. Philip Lewin, 55 East Washington St., Chicago, Secretary.

Eastern Section, American Laryngological, Rhinological and Otological Society, Boston, Jan. 7. Dr. D. C. Jarvis, Quarry Bank Bldg., Barre, Vt., Chairman.

Middle Section, American Laryngological, Rhinological and Otological Society, Chicago, Jan. 11. Dr. Alfred Lewy, 25 East Washington St., Chicago, Chairman.

Mid-Western Section, American Laryngological, Rhinological and Otological Society, Chicago, Jan. 11. Dr. Frederick A. Figi, 436 Tenth Ave., S.W., Rochester, Minn., Chairman.

Puerto Rico, Medical Association of, San Juan, Dec. 18-20. Dr. Dolores M. Pinero, Ave. Fernandez Juncos, Parada, 19, Santurce, Secretary.

Society of American Bacteriologists, Indianapolis, Dec. 28-30. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.

Society of Surgeons of New Jersey, Newark, Jan. 6. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

Southern Section, American Laryngological, Rhinological and Otological Society, Memphis, Tenn., Jan. 13. Dr. Charles D. Blassingame, Physicians and Surgeons Bldg., Memphis, Tenn., Chairman.

Western Section, American Laryngological, Rhinological and Otological Society, San Diego, Calif., Jan. 30-31. Dr. David R. Higbee, 3245 Fourth Ave., San Diego, Calif., Chairman.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

### American Heart Journal, St. Louis

**12:** 257-382 (Sept.) 1936

*Use of Circulatory Measurements in Evaluating Pulmonary and Cardiac Factors in Chronic Lung Disorders. B. S. Oppenheimer and W. M. Hitzig, New York.—p. 257.

Transient Auricular Fibrillation as Toxic Manifestation of Digitalis. C. L. Tung, Peiping, China.—p. 272.

Effect of Stellate Ganglionectomy on Cardiac Function of Intact Dogs and Its Effect on Extent of Myocardial Infarction and on Cardiac Function Following Coronary Artery Occlusion. W. V. Cox, Lewiston, Maine, and H. F. Robertson, Toronto.—p. 285.

Experimental Extrasystoles Elicited Through Artificial Stimulation of Endocardium of Dog. I. Marcu, Bucharest, Rumania.—p. 301.

Study of Esophageal Lead in Clinical Electrocardiography: Part II. Electrocardiographic Study of Auricular Disorders in Human Subject by Means of Esophageal Lead. W. H. Brown, Toronto.—p. 307.

Unusual Features of Two Cases of Sino-Auricular Block. I. de Zárday, Budapest, Hungary.—p. 339.

Electrocardiographic Changes in Hyperparathyroidism. F. Kellogg and W. J. Kerr, San Francisco.—p. 346.

**Pulmonary and Cardiac Factors in Lung Disorders.**—Oppenheimer and Hitzig studied fifty-four cases of bronchogenic (obstructive) emphysema and sixteen cases of bronchial asthma. The circulatory measurements employed were initial venous pressure, the rise of venous pressure during right upper abdominal quadrant compression, the arm-to-lung time (ether), the arm-to-tongue time (saccharin or sodium dehydrocholate) and the lung-to-tongue time (saccharin time minus ether time). Uncomplicated pulmonary insufficiency is usually attended by normal circulatory measurements. The presence of abnormal circulatory measurements indicates that pulmonary insufficiency is complicated by myocardial failure. Incipient isolated right heart failure is characterized by the presence of a normal initial venous pressure, and a varying rise in this pressure during right upper quadrant compression. The arm-to-lung time may or may not be prolonged, and the lung-to-tongue time is normal. Frank isolated right heart failure is characterized by high initial venous pressure, considerable rise on right upper quadrant compression, prolongation of the arm-to-lung time and a relatively normal lung-to-tongue time. Left heart failure is characterized by normal initial venous pressure with or without a rise on right upper quadrant compression, a normal or slightly prolonged arm-to-lung time, and a considerably prolonged lung-to-tongue time. Universal heart failure is characterized by high initial venous pressure, with a considerable rise in right upper quadrant compression and prolongation of the arm-to-lung time and lung-to-tongue time. Bronchial asthma with a few exceptions is characterized by normal initial venous pressure, absence of a rise of right upper quadrant pressure, and normal or fast normal circulation times. Cardiac asthma is differentiated from bronchial asthma by the presence of abnormal circulatory measurements. That incipient right heart failure also frequently accompanies left ventricular failure may be demonstrated by the method of compressing the right upper quadrant of the abdomen and observing the presence of a rise in the normal initial venous pressure level. In chronic bronchopulmonary disease there is apparently no parallelism between the severity of the clinical symptoms and the slowing of the pulmonary blood flow.

**12:** 383-510 (Oct.) 1936

Thorotrast Arteriograhy of Extremities: Report of Illustrative and Unusual Cases. W. M. Yater, Washington, D. C.—p. 383.

Theoretical Considerations Regarding Variations of RST Segment and Subsequent T Wave Following Local Ventricular Trauma. N. M. Fenichel, C. Shookhoff and D. I. Abramson, Brooklyn.—p. 406.

Application of Roentgenkymography to Study of Normal and Abnormal Cardiac Physiology. I. S. Hirsch and R. Gubner, New York.—p. 413.

*Relationship of Tachycardia to Cardiac Insufficiency. D. Luten, St. Louis.—p. 435.

Differential Diagnosis of Congestive Heart Failure and Constrictive Pericarditis (Pick's Disease). H. B. Sprague, Boston.—p. 443.

Case of Congenital Aortic Atresia with Hypoplasia of Ascending Aorta, Normal Origin of Coronary Arteries, Left Ventricular Hypoplasia and Mitral Stenosis. J. T. Roberts, New Orleans.—p. 448.

*Sudden Arterial Occlusion in Thrombo-Angiitis Obliterans. W. Kvale and E. V. Allen, Rochester, Minn.—p. 458.

**Relation of Tachycardia to Cardiac Insufficiency.**—Luten asserts that the various elements of the circulation are subject to reflex variation. By reciprocal adjustments, balance tends to be maintained despite disorder in one component. Primary impairment of the peripheral circulation or of cardiac output produces reflex acceleration of the sinus heart rate. Compensatory tachycardia is physiologic, not harmful. Its primary abatement is not a proper therapeutic objective. Improvement is followed by reverse slowing. Conversely, primary acceleration of rate tends to induce compensatory adjustment in blood pressure and in systolic discharge. With sinus rates nearly as high as 200, the circulation remains adequate. In auricular fibrillation the ventricular rate appears to depend largely on the state of the ventricular muscle. This arrhythmia frequently occurs in congestive heart failure. Under such circumstances reduction in rate follows improvement in the muscle, from digitalis or from other cause. In cases of fibrillation without heart failure the muscular effect of digitalis is not beneficial; in such instances, administration of the drug is not followed by slowing. In auricular fibrillation, as in normal rhythm, abatement of tachycardia appears not to be the cause of improvement but to be the result of it.

**Sudden Arterial Occlusion in Thrombo-Angiitis Obliterans.**—Kvale and Allen reviewed the records of 255 carefully studied cases of thrombo-angiitis obliterans. Arterial thrombosis, as a primary clinical manifestation of thrombo-angiitis obliterans, occurred suddenly in eleven of their 255 cases. None of the patients were under their observation at the time occlusion occurred. Amputation was eventually necessary in two cases. Arterial thrombosis may occur suddenly in the course of well developed thrombo-angiitis obliterans and did in fifteen. Only two of the fifteen patients were under the authors' observation at the time occlusion occurred. Amputation of a leg was subsequently necessary in ten cases. Treatment, which should be begun promptly, consists of relief of pain, avoidance of burning the limb and the relief of arterial spasm, or the induction of vasodilatation, by means of drugs, intermittent negative and positive pressure, artificially induced fever or anesthesia.

### American Journal of Cancer, New York

**28:** 1-232 (Sept.) 1936

Metastases of Intracranial Tumors. A. A. Nelson, Minneapolis.—p. 1.

Hypernephroma and Spindle Cell Sarcoma of Kidney. M. M. Bracken, Toronto.—p. 13.

Vaginal Metastases from Hypernephroma: Report of Four Cases. J. G. Sharnoff and A. M. Sala, New York.—p. 20.

Factors in Cause of Death in Carcinoma of Cervix: Study of Fifty-Seven Cases Coming to Necropsy. B. Pearson, Minneapolis.—p. 31.

*Life Expectancy and Incidence of Malignant Disease: I. Carcinoma of Breast. I. T. Nathanson and C. E. Welch, Boston.—p. 40.

Neoplastic Diseases Produced in Mice by General Irradiation with X-Rays: I. Incidence and Types of Neoplasms. J. Furth and O. B. Furth, New York.—p. 54.

Id.: II. Ovarian Tumors and Associated Lesions. J. Furth and J. S. Butterworth, New York.—p. 66.

Coal Smoke Soot and Tumors of Lung in Mice. M. G. Seelig and E. L. Benignus, St. Louis.—p. 96.

Successful Transplantation of Hepatoma in Mice. L. C. Strong and G. M. Smith, New Haven, Conn.—p. 112.

Further Consideration of Growth Rates of Tar Warts in Mice and of Their Autografts. J. C. Mottram, London, England.—p. 115.

Studies on Concomitant Immunity. J. J. Bittner, Bar Harbor, Maine.—p. 121.

Metastatic Gingival Adenocarcinoma from Primary Lesion of Colon. A. A. Humphrey and N. H. Amos, Battle Creek, Mich.—p. 128.

Rhabdomyosarcoma of Testis: Report of Two Cases. A. J. Hertzog, Minneapolis.—p. 131.

Benign Tumors of Stomach. J. F. Minnes and C. F. Geschickter, Baltimore.—p. 136.

**Life Expectancy in Malignant Disease.**—Nathanson and Welch calculated the life expectancy in 1,565 treated cases of carcinoma of the breast observed in the Huntington Memorial and Pondville hospitals. The age and sex incidence in 2,190

cases of cancer of the breast seen in the same institutions have been determined. The average length of life from onset of the disease is 3.5 years in patients treated in the years 1912 to 1932, compared with 2.5 years in those untreated. There is no absolute proof from these data that the treatment of carcinoma of the breast has increased the life expectancy significantly in the years 1923 to 1932 compared with that of the years 1912 to 1922. The Huntington group shows a definite improvement in the second decade, but this is probably due to a more favorable group of cases. The median length of life in the age group less than 40 is about three years, from 40 to 60 about three and a half years, and about four years thereafter. Cancer of the breast in the hospital cases is more malignant in the young and less so in the old. Men seem to have a slightly better life expectancy than women, but the number of male cases is too small for positive conclusions. Susceptibility to cancer of the breast increases steadily with age.

## American Journal of Medical Sciences, Philadelphia

**192:** 445-588 (Oct.) 1936


Purpura Haemorrhagica with Lymphocytosis: Acute Type and Intermittent Menstrual Type. G. R. Minot, Boston.—p. 445.

Quantitative Variations in Hemacytologic Constitution of Healthy Men and Rabbits. P. D. Rosahn and A. E. Casey, New York.—p. 456.

Reaction Following Intra-Group Blood Transfusion: Irregular Agglutinin Demonstrated by Sensitive Centrifuge Test Method. C. G. Culbertson and A. W. Ratcliffe, Indianapolis.—p. 471.

*Splenectomy in Treatment of Subacute Bacterial Endocarditis. D. Riesman, J. A. Kolmer, Philadelphia, and D. Polowe, Paterson, N. J.—p. 475.

Gout: A Forgotten Disease. W. W. Herrick and T. L. Tyson, New York.—p. 483.

Gout. A. Cohen, Philadelphia.—p. 488.

Fatal Case of Bacillus Friedländer Abscess of Prostate. J. Tenenbaum and J. M. Ravid, Brooklyn.—p. 494.

Treatment of Gonorrheal Arthritis with Artificial Fever. R. M. Stecher and W. M. Solomon, Cleveland.—p. 497.

Effect of Intravenous Injections of Sucrose Solution (50 per Cent) on Cerebrospinal Fluid Pressure, Blood Pressure and Clinical Course in Cases of Chronic Hypertension. F. D. Murphy, R. A. Hershberg and A. M. Katz, Milwaukee.—p. 510.

Cerebral Degeneration with Encephalographic Study Eight Years After Common Carotid Ligation: Case. H. Wortis, New York.—p. 517.

Effect of Injection of Certain Nitrogen-Containing Compounds into Cisterna Magna on Blood Pressure of Dogs. H. Resnik Jr. and M. F. Mason, Nashville, Tenn.—p. 520.

*Blood Phosphatase as an Aid in Differential Diagnosis of Jaundice. M. M. Rothman, D. R. Meranze and T. Meranze, Philadelphia.—p. 526.

Comparative Advantages and Further Modification of Bilirubin Excretion Test for Hepatic Function. L. J. Soffer and M. Paulson, Baltimore.—p. 535.

Hepatic Infarction in Myelogenous Leukemia and Periarteritis Nodosa. D. R. Morgan, M. M. Lieber and H. L. Stewart, Philadelphia.—p. 540.

Effect of Oil of Wintergreen on Incidence of Spontaneous Carcinoma in Mice: IV. Effect on Growth Rate and Survival Time After Onset of Malignancy. L. C. Strong, New Haven, Conn.—p. 546.

Chronic Dysentery, Distal Ileitis and Ulcerative Colitis: Follow Up of Jersey City Epidemic of Bacillary Dysentery. J. Felsen, New York, and H. Gorenberg, Jersey City, N. J.—p. 553.

Appearance of Electrocardiogram in Relation to Position of Heart Within Chest. L. N. Katz and M. Robinow, Chicago.—p. 556.

Physiologic Effects of Benzedrine and Its Relationship to Other Drugs Affecting Autonomic Nervous System. A. Myerson, J. Loman and W. Dameshek, Mattapan, Mass.—p. 560.


**Splenectomy in Treatment of Subacute Bacterial Endocarditis.**—Riesman and his associates find that splenectomy for subacute bacterial endocarditis is well borne even in far advanced cases. It has not so far been followed by a permanent sterilization of the blood stream in cases in which blood stream infection has existed. Nevertheless, life is unquestionably prolonged and made more comfortable. The physical and psychic improvement is most impressive. Even if the infectious process should continue in the heart, and it is possible that even this might be favorably affected, it seems that the general condition of the patient is improved. Perhaps if the operation should be done earlier in patients with palpable spleens and hearts not too badly damaged, the results might be better. As death seems to be due in the majority of cases to embolism, the prevention of this complication should be taken into consideration. Treatment should not rest with splenectomy. Repeated small transfusions should be continued and bacteriophage therapy tried. Splenectomy may prove to be a method of dealing with intractable forms of sepsis without discoverable focus in which splenomegaly is a prominent feature. This group, in which subacute bacterial endocarditis may be suspected but is unproved, at present promises the best results from the operation.

**Blood Phosphatase and the Diagnosis of Jaundice.**—Clinical data are presented by Rothman and the Meranzes to substantiate Roberts' original assertion concerning the clinical usefulness of phosphatase determinations in the differential diagnosis of jaundice. Attention is called to a number of instances in which the phosphatase values were greater than 10 units. They cannot, however, entirely agree with Roberts when he states that it is not necessary to know the concomitant serum bilirubin values in order to interpret the phosphatase readings. A comparison of the relative increase in the values of phosphatase and serum bilirubin above their respective normals gives additional aid in diagnosis and, in particular, makes possible a correct interpretation of those borderline values of 10 units or slightly above. The basis for this belief lies in the observation that in obstructive jaundice the rise in the phosphatase and serum bilirubin tends to run parallel until the limits of the phosphatase values are reached. In nonobstructive cases, on the other hand, in spite of the progressive increase in serum bilirubin, the phosphatase values rarely rise above 10 units and no parallelism is noted. Phosphatase determinations should be considered as representing a composite of effects, the dominant pathologic state exerting the greater influence on its value. The test can serve as a means of differentiating between the two classes of jaundice only in the absence of other conditions affecting phosphatase. The specific etiology must at present be inferred from other studies. In its ability to help differentiate between an obstructive and a nonobstructive jaundice, however, the phosphatase determination appears to be superior to other available tests, the galactose tolerance test in particular, when the latter is used to detect acute parenchymal liver disease. Too much reliance must not be placed on a single phosphatase determination. If, for example, a first estimation of phosphatase were to be made early in the onset of obstructive jaundice, as the jaundice is developing, it is conceivable that the phosphatase value, rising slowly in proportion, may not as yet have reached diagnostic heights. The low phosphatase value obtained under such conditions may be misleading.

## American J. Obstetrics and Gynecology, St. Louis

**32:** 547-726 (Oct.) 1936


*Anemia in Pregnancy. F. L. Adair, W. J. Dieckmann and K. Grant, Chicago.—p. 560.

Further Study of Extraperitoneal Pelvic Conditions in Women. L. Brady, Baltimore.—p. 577.

Relation of Endocrine System to Tumor Growth: Effect of Hypophysectomy and Pituitary Growth Hormone on Transplantable Rat Sarcoma. L. A. Emge and Kathleen M. Murphy, San Francisco.—p. 593.

*Estrogenic Substances in Blood of Women. C. F. Fluhmann, San Francisco.—p. 612.

Total versus Subtotal Hysterectomy: Clinical and Technical Study. J. R. Goodall, Montreal.—p. 628.

Total Hysterectomy by Abdominal versus Vaginal Route in Benign Uterine Disease. E. H. Richardson, Baltimore.—p. 641.

Retroperitoneal Pelvic Tumors Encountered by the Gynecologist. J. R. Miller, Hartford, Conn.—p. 652.

Radium Irradiation for Benign Hemorrhage, with a Two to Twenty Year Review of 1,437 Cases. C. C. Norris and C. A. Behney, Philadelphia.—p. 661.

*Relation of Endometrial Hyperplasia to Adenocarcinoma of Uterus. E. Novak, Baltimore, and E. Yui, Shanghai, China.—p. 674.

Secondary Sequels After Interposition of Uterus. W. T. Dannreuther, New York.—p. 699.

Immediate Repair of Cervical Injuries. W. C. Danforth, Evanston, Ill.—p. 710.

Relationship of Acanthosis Nigricans to Abdominal Malignancy: Report of Cases, Including One in Which Primary Growth Was in the Pelvis. J. C. Masson and H. Montgomery, Rochester, Minn.—p. 717.


**Anemia in Pregnancy.**—Adair and his collaborators illustrate the importance of the chemical determination of hemoglobin in pregnancy by stating that the test indicates that 63 per cent of pregnant women are anemic according to nonpregnant standards. Their data indicate that the concentration of hemoglobin, the cell volume and the erythrocyte count are definitely decreased during pregnancy and that the normal standards for the nonpregnant differ from those of the pregnant women. Statistically the minimal figures in normal pregnancy should be 10.16 for hemoglobin, 33.11 for cell volume and 3.36 for the erythrocyte count. The physiologic decrease and increase in

hemoglobin, cell volume and erythrocytes during pregnancy have not been evaluated properly. The fact that the hemoglobin concentration can increase 2, 3 or even 6 Gm. within four weeks without treatment at once casts doubt on any reports which state that improvement occurred during pregnancy when iron salts were administered. It is the authors' belief that the hemoglobin concentration of the cord blood is usually normal even though the mother has an anemia, but in a number of instances the hemoglobin concentration has been definitely below normal. This is especially important in view of the fact that milk contains little iron and, if the baby begins life with a low concentration of hemoglobin, anemia is quite likely to develop. This is still more important in premature infants, as they are born without the storage of iron in the liver which exists in the term baby. Severe anemia predisposes to premature delivery. Transfusion of blood, if properly supervised and if adequate amounts are given, has always been efficacious in raising the hemoglobin concentration and relieving all symptoms and signs of anemia. There was no case of premature labor. If the cause of the anemia occurring in pregnancy was merely a lack of iron in the diet, patients who receive iron should all show rapid improvement when adequate amounts of iron are added. The fact that a considerable number of patients show no improvement indicates that some other substance is lacking or that the iron is not being absorbed or that, if absorbed, it is not being utilized. The prevention of anemia of pregnancy is easier than the cure. An adequate diet, with proper hygiene, is the best prophylaxis.

**Estrogenic Substances in Blood of Women.**—Fluhmann examined 401 specimens of blood from eighty-four women and fifteen prepubertal girls. The blood of five of seven normal girls between the ages of 8 and 10 years gave positive reactions for estrogenic substance, whereas the tests were negative in seven of eight girls from 4 to 7 years of age. In twenty-two of twenty-five patients it was found that during the course of the menstrual cycle there was an increase in the concentration of estrogenic substance in the blood, which occurred during the midinterval and seemed to be associated with ovulation. A secondary rise just before or at the onset of menstruation was observed in seven instances. No characteristic variations were observed in four patients with anovulatory cycles. Of sixteen cases of menorrhagia, polymenorrhea or uterine hemorrhage due to hyperplasia of the endometrium, a rise in the concentration of the blood estrogenic substance was observed in ten at the onset of the bleeding. In patients with amenorrhea there was a cyclic rise and fall in the amount of estrogenic substance, a constant moderate amount of estrogenic substance was present or there was a persistent absence of demonstrable estrogenic substance. Estrogenic substances were found in the blood of women following castration and in the postclimacteric period. The presence of estrogenic substance in the blood was demonstrated in association with increased amounts of gonadotropic substance.

**Relation of Endometrial Hyperplasia to Adenocarcinoma of Uterus.**—Novak, with the assistance of Yui, reviewed the records of 12,813 cases that have been examined in his laboratory during a period of eleven years. They found 804 instances of endometrial hyperplasia and 104 of corporeal adenocarcinoma that suggested a relationship of some sort between the two conditions. While in the majority of cases hyperplasia is a frankly benign lesion, a small minority (fourteen of the 804) present evidences of marked proliferative tendencies, which may even simulate cancer. Atypical gland proliferations simulating adenocarcinoma are especially frequent in the polyps so often seen with hyperplasia. Hyperplasia is not rare in women long after the menopause (forty cases). The occasional occurrence of hyperplasia with bleeding in elderly women lessens the probability of granulosa-cell carcinoma of the ovary, unless an ovarian tumor can actually be palpated. In the study of the 104 cases of adenocarcinoma, the most impressive result was the demonstration of a coexisting hyperplasia and adenocarcinoma in twenty-five of the cases in which some of the noncancerous endometrium was available for study. Since seventy-eight of ninety-two adenocarcinoma patients were past the menopausal age, this suggests that a postmenopausal hyperplasia, or the endocrine dysfunction responsible for it, must strongly predispose to the development of adenocarcinoma. Since a persistence and relative excess of estrogenic substance is accepted as the cause of hyperplasia, it would seem that it is this endocrine factor which must be suspected as the one predisposing to cancer genesis. The author emphasizes not only that the ordinary hyperplasia of the reproductive period is frankly benign from the histologic standpoint but also that it has no apparent predisposing influence in the causation of adenocarcinoma during menstrual life. It would seem from his studies that it is the postmenopausal persistence of hyperplasia which is in some way bound up with the occurrence of the common postmenopausal type of adenocarcinoma. In his cases of coexisting hyperplasia and adenocarcinoma, he has been able to show a definite transition of the benign to a borderline and then to an undoubtedly malignant pattern in some cases, so that in the endometrium at least it would seem that one is dealing with histologic intergrades between benign and malignant lesions. Whether abolition of ovarian function by x-rays or radium in the treatment of functional bleeding of the menopause would be of any practical value is questionable, since it seems quite certain that other sources of estrogenic substance than the ovary must be reckoned with. In the cervix uteri, corpus uteri and breasts one has to deal with the possible rôle of ovarian hormones. This seems significant in view of the growing opinion that the carcinogenic possibilities of estrogenic substances are most to be reckoned with in those organs in the growth and activities of which the estrogenic principle normally plays an important part.

## Annals of Internal Medicine, Lancaster, Pa.

**10:** 427-568 (Oct.) 1936

Common Lesion of Cervical Spine Responsible for Segmental Neuritis. E. L. Turner and A. Oppenheimer, Beirut, Syria.—p. 427.
Acute Pneumonitis. W. H. Allen, Fort Sam Houston, Texas.—p. 441.
Diverticula of Stomach. L. Martin, Baltimore.—p. 447.
Study of Four Cases of Acquired Arteriovenous Fistula by Means of Thorotrast Arteriography. W. M. Yater, Washington, D. C.—p. 466.
Effects of Gastric and Intestinal Hyperperistalsis on Electrocardiogram as Demonstrated by Simultaneous Mechanograms and Indirect and Semidirect Electric Leads. I. H. Tumpeer, Chicago.—p. 487.
Value of Sedimentation Test as Diagnostic Aid. J. E. Hirsh, Birmingham, Ala.—p. 495.
Clinical Experiences with Reduced Doses of Thevetin Orally Administered. E. R. Daniels and W. S. Middleton, Madison, Wis.—p. 505.
Diagnosis and Treatment of Hyperinsulinism. S. Harris, Birmingham, Ala.—p. 514.
*Massive Doses of Vitamin D in Treatment of Proliferative Arthritis. B. L. Wyatt, R. A. Hicks and H. E. Thompson, Tucson, Ariz.—p. 534.

**Massive Doses of Vitamin D in Treatment of Proliferative Arthritis.**—Wyatt and his associates selected forty patients having chronic infectious or proliferative arthritis for treatment by massive doses of vitamin D. These patients had been under observation for at least six months and it was possible thereby to contrast their progress before and after the administration of large doses of vitamin D. There was no special selection of patients other than that any patient was eliminated whose general condition was such that a severe reaction might be disastrous. Later it became evident that the presence of a very sensitive colon contraindicated the use of the vitamin in large quantities. In general it was found that the type of arthritic patient for whom vaccine is indicated was decidedly not the type in which to use massive doses of vitamin D. After a baseline in degree of progress for six months was established, massive daily doses of vitamin D (not more than 300,000 units, but usually 200,000 units) with supplementary medication (vitamin B and calcium) were instituted and similar studies of the patient were continued. The additional treatment of these patients consisted of adequate rest, physical therapy, heliotherapy, dietotherapy, treatment or early removal of foci, blood transfusions, orthopedic measures and intravenous bacterial antigen. There were individual variations. The percentage of clinical improvement noted was considered definite and clear cut in 20 per cent; i. e., in eight patients a definite progressive increase in appetite, weight, general feeling of strength and a decrease in joint swelling, pain and stiffness were evident. Similarly, in eight patients it was necessary to abandon the treatment entirely, owing to unfavorable reactions. The remaining twenty-four patients showed no definite benefits that could be attributed to vitamin D therapy. The morphologic blood picture did not alter in these patients more rapidly or more distinctly in general than it does in other patients

treated without vitamin D. Calcium and phosphorus determinations exhibited only minimal changes, the average increase in calcium content of the serum being from 0.75 to 0.95 mg. All determinations were within normal limits. There was no significant change in the calcium phosphorus ratio noted.

## Archives of Neurology and Psychiatry Chicago

**36:** 675-916 (Oct.) 1936

Electrical Activity of the Cat's Brain. R. W. Gerard, W. H. Marshall and L. J. Saul, Chicago.—p. 675.
*Pick's Disease: Clinicopathologic Study with Report of Two Cases. A. Ferraro and G. A. Jervis, New York.—p. 739.
Id.: Clinicopathologic Contribution. K. Löwenberg, Ann Arbor, Mich.—p. 768.
*Psychiatric, Neurologic and Neuropathologic Studies in Disseminated Alterative Arteriolitis. Lauretta Bender, New York.—p. 790.
Effect of Benzedrine Sulfate on Mood and Fatigue in Normal and in Neurotic Persons. A. Myerson, Boston.—p. 816.

**Pick's Disease.**—Ferraro and Jervis conclude that in Pick's disease neuronal changes consist primarily of cellular atrophy extending to the whole cortex, with accentuation in the frontal and temporal lobes. The cortical senile atrophy may at times be most evident in the third layer, as is observed also in Pick's disease. Histopathologic details common to senility and to Pick's atrophy add further evidence to the similarity, among which are the frequency of pigmentary surcharge and fatty degeneration of the nerve cells, the presence of numerous corpora amylacea and torpedos, and the large amount of iron. The formation of cellular argentophilic inclusions may be due to a physicochemical process leading to the formation of argentophilic substance, which is commonly observed in association with senility. Senile plaques were not observed in the authors' two cases. However, the significance of these formations as pathognomonic of senile processes is still uncertain. In their cases, evidence of histopathologic changes representing tissue response to vascular involvement was observed. In striking contrast with these tissue changes, however, there were noted only slight alterations in the blood vessels, consisting mainly of fibrosis of a few capillaries and occasionally of endothelial proliferation. Similar contrasts are frequent in the general pathologic changes of arteriosclerosis. In Pick's disease, vascular spasm can explain the circumscribed zones of gross cortical atrophy as a result of repeated local vasospasms. Whether angiospasm may more easily affect predisposed tissue the authors are not prepared to say, though in their material they encountered changes comparable to those associated with normal and pathologic senility. The angiospasm might be produced by disturbance of the colloidal equilibrium or it may also be due to metabolic toxic factors of undetermined origin which act through the mechanisms of vasospasm or independently of it.

**Studies in Disseminated Alterative Arteriolitis.**—Bender presents two cases of disseminated alterative arteriolitis in which the typical vascular lesions were evinced in the brain as well as in other organs of the body, although endocarditis was not present. The two cases are instances of apparent infection, one associated with a pulmonary process and the other with an abortion, in which lesions of the heart valves and walls were not detected but in which the productive arteriolitis was present in the myocardium and in all internal organs, including the brain. The cerebral lesions were like those in other organs of the body and were characterized by endothelial proliferation, swelling, necrosis and obliteration of the lumen. This endothelial hypertrophy occurred especially as a knotlike process at the point at which the arterioles break into the capillary network. It had a characteristic localization in the central nervous system in the larger groups of nerve cells. The vascular lesions were associated with secondary loss or paling of the nerve cells and proliferation of the astrocytic cells and with typical neurologic and psychic disturbances related to the failure in function of the cerebral and cerebellar centers and those of the brain stem. The lesions and the secondary organic failure were progressive; in one case death was due apparently to cerebral failure and in the other to cardiovascular, renal and hepatic failure, with associated cerebral signs. The concept of this disease entity has evolved from that of acute bacterial endocarditis, in which an infectious agent produces a productive and destructive lesion of the whole inner lining of the cardiovascular system, with typical vegetative endocarditis in the more acute forms.

## Archives of Ophthalmology, Chicago

**16:** 555-732 (Oct.) 1936

Treatment of Atrophy of Optic Nerve. H. Lauber, Warsaw, Poland.—p. 555.
Iridectomy with Cyclodialysis for Reduction of Ocular Tension. J. M. Wheeler, New York.—p. 569.
Treatment of Angioma of Eyelid by Injection of Sclerosing Solutions. B. Malkin, Saratow, U. S. S. R.—p. 578.
Postoperative Glaucoma. S. A. Fox, New York.—p. 585.
Ophthalmologist, Oculist, Optician and Optometrist: Origin of These Words in the English Language. F. H. Rodin, San Francisco.—p. 609.
Malformations of Posterior Segment of Human Eye: Embryologic Interpretation. Bertha A. Klien, Chicago.—p. 624.
Choice of Surgical Procedure for Strabismus. H. G. Merrill, San Diego, Calif.—p. 642.
New Type of Telescopic Lens. M. L. Berliner, New York.—p. 649.
Further Observations on Detachment of Choroid After Cataract Extraction. C. S. O'Brien, Iowa City.—p. 655.
Preparation of Orbits of Cadavers for Dissection and Operation. O. V. Batson, Philadelphia.—p. 657.
*Cataract Extraction Through a Vertical Conjunctival Slit: Preliminary Report. W. Moehle, Brooklyn.—p. 659.
Adenocarcinoma of Orbit. W. L. Benedict, Rochester, Minn.—p. 663.
*Choroidal Chorionepithelioma Secondary to Teratoma of Testicle. A. E. MacDonald, Toronto.—p. 672.
Hyperplasia of Epithelium of Ciliary Processes (Ciliary Adenoma of E. Treacher Collins): Case. W. Zentmayer, Philadelphia.—p. 677.
Transparent Exophthalmometer. W. H. Luedde, St. Louis.—p. 681.

**Cataract Extraction Through a Vertical Conjunctival Slit.**—Moehle states that with his method of extracting the lens the anatomic conjunctival supply of blood to the region of the corneal section is retained, because the incision is made parallel to the course of the vessels, thus assuring maximal nutrition and avoiding unnecessary hemorrhage. The method also facilitates the making of the corneal section with a keratome, with subsequent enlargement of the section with scissors subconjunctivally. The vertical slit renders the iris and capsule accessible and does not interfere with the delivery of the lens. No conjunctival suture is required, since the undermined conjunctiva immediately lies smooth and flat, with the edges of the incised wound in close approximation. However, if desired, a suture may be inserted, closing the conjunctival incision.

**Choroidal Chorionepithelioma Secondary to Teratoma of Testicle.**—MacDonald saw a choroidal chorionepithelioma in a young man who complained of a painless mass in the scrotum. Marked endocrine disturbance was present, as he showed some of the secondary manifestations of pregnancy, linea nigra and female distribution of pubic hair, hypertrophy of the breasts and secretion in the acini. Following removal of the eye owing to the rapid growth of the tumor, the clinical diagnosis was made and was later confirmed at necropsy. The mixed tumor of the testicle was a true teratoma involving all three primitive layers. All the metastases were of the chorionepithelioma type and were widespread. The pituitary gland showed marked changes, and the Aschheim-Zondek test for urine was positive.

## Archives of Pathology, Chicago

**22:** 435-582 (Oct.) 1936

Plastic Studies in Abnormal Renal Architecture: IV. Vascular and Parenchymal Changes in Arteriosclerotic Bright's Disease. Dorothy Loomis, Brooklyn.—p. 435.
Viability of Cells in Inflammatory Exudates. F. E. Kredel and Helen M. Van Sant, Chicago.—p. 464.
Somatic Carcinoma and State of Interstitial Cells of Testicle. E. E. Collins, Cleveland.—p. 470.
*Calcific Sclerosis of Aortic Valve (Mönckeberg Type.). A. R. Sohval and L. Gross, New York.—p. 477.
Histologic Features of Intradermic Reaction to Tuberculin in Cattle. W. H. Feldman, Rochester, Minn., and C. P. Fitch, St. Paul.—p. 495.
Epidemic Encephalitis in Japan: Causative Agent Compared with That in the St. Louis Epidemic. R. Kawamura, M. Kodama, T. Ito, T. Yasaki and Y. Kobayakawa, Niigata, Japan.—p. 510.
*Hemorrhagic Extravasations into Leaflets of Atrioventricular Valves: Their Relationship to Pulmonary Embolism. E. Clark and A. R. Berger, New York.—p. 524.
Experimental Pulmonary Embolism and Infarction. B. Steinberg and C. S. Mundy, Toledo, Ohio.—p. 529.
Production of Intimal Changes in Arteries Attempted in Rat by Prolonged Feeding of Acetoacetic Acid. J. J. Short, M. Bruger and L. Jaffe, New York.—p. 543.

**Calcific Sclerosis of Aortic Valve (Mönckeberg Type).**—Sohval and Gross discuss the changes that they found in eighteen hearts with so-called Mönckeberg's calcific sclerosis of the aortic valve, in nineteen hearts with a grossly poly-

valvular extinct rheumatic process and in thirteen hearts with a grossly monovalvular extinct rheumatic process. Essentially different gross and microscopic features were revealed in the Mönckeberg and rheumatic valvular lesions. The heart with the uncomplicated Mönckeberg process shows practically none of the stigmas of extinct rheumatic fever and no other evidence which would indicate that the process is secondary to inflammatory changes. The possible mechanisms concerned in the development of the essential Mönckeberg process appear to be purely and primarily degenerative, its occurrence and extent depending in all probability on individual predisposition to collagen involution and lipoid and calcium deposition. The lesions of three hearts with submarginal aortic commissural bridging of noninflammatory nature suggest that stress and strain in the aortic valve may serve as additional factors predisposing to degenerative processes. In certain persons in whom there exists a predisposition toward the deposition of lipoid and calcium, inflammatory lesions with subsequent deformity of the aortic valve may impose sufficient strain on the valve to initiate the Mönckeberg process.

**Hemorrhage into Leaflets of Atrioventricular Valves.**—Clark and Berger observed hemorrhagic extravasation into noninflamed atrioventricular valvular leaflets at necropsy in four persons at Bellevue Hospital. In one, ecchymoses of the leaflets of the mitral and tricuspid valves accompanied similar extravasations beneath the mural endocardium. In the other three the strict limitation of the endocardial ecchymoses to the leaflets of the tricuspid valve and the coexistence of embolism of the pulmonary artery suggested a relationship between the hemorrhagic extravasations and the embolism. Though in all four cases some of the valvular ecchymoses involved the vascularized annulus and might have been due to rupture of those vessels, other hemorrhages were localized in the distal nonvascularized portions of the leaflets. The source of the red cells in the latter portions remains obscure. Though it is possible that cells from ruptured vessels at the annuli infiltrated the distal portions of the leaflets, no evidence of this was obtained even in serial microscopic sections. In view of the common persistence of vessels in the leaflets of the tricuspid and mitral valves, the possibility exists that the blood cells were derived from ruptured vessels which evaded detection. Penetration by cells from the chamber of the heart through disruption of the lining of the leaflets is impossible to exclude, although the authors could not establish it by microscopic examination. The limitation of the hemorrhages to the leaflets of the tricuspid valve in the three cases of pulmonary embolism reported here, as well as in the two described by Geipel, supports the belief that the two phenomena are related. Whether this is due to trauma to the leaflet by the embolus during its passage through the tricuspid orifice or as the result of an abrupt rise in intraventricular tension cannot be determined.

## Arch. of Physical Therapy, X-Ray, Radium, Chicago

**17:** 609-672 (Oct.) 1936

Educational Standards for Physical Therapy Technicians. O. N. Andersen, Chicago.—p. 615.
The American Registry of Physical Therapy Technicians. Marion G. Smith, Chicago.—p. 619.
Cancer Clinic in Medical and Dental Schools. G. E. Ward, Baltimore.—p. 622.
Rôle of Physical Therapy in Fractures. O. B. Bolibaugh, Washington, D. C.—p. 627.
Effective European Methods of Hydrotherapy Neglected in the United States. C. I. Singer, Long Beach, N. Y.—p. 631.
Rheumatic Problem in Great Britain. R. Kovacs, New York.—p. 636.
Notes on Backscatter in X-Ray Calibration. C. C. McClure and A. C. Omberg, Nashville, Tenn.—p. 640.
Iontophoresis in Rheumatoid Arthritis. R. T. Phillips, Boston.—p. 642.
Recent Advances in Short Wave Diathermy. F. Nagelschmidt, Manchester, England.—p. 644.
*Local Heat Treatment in Ozena: Preliminary Report. C. K. Gale, New York.—p. 646.

**Local Heat Treatment in Ozena.**—Gale's method for the treatment of ozena consists of the direct application of heat to a large surface of the nasal mucous membrane for prolonged periods. Into the right nasal fossa a rubber applicator of special design and shape is inserted, which has been filled with barium for roentgenographic purpose. It extends the entire length of the inferior meatus back to the posterior nasopharynx and upward beyond the level of the middle turbinate. On inflation it establishes contact with both the medial and lateral walls of the nose. If instead of barium the applicator is filled with a heated solution from an Elliott apparatus, a heat effect by direct contact over the entire area will be obtained. In the clinical application, suction is first applied which collapses the applicator by vacuum action and facilitates complete filling of the applicator with a solution only. The applicator is made of very thin but strong rubber and, when inserted into the nose, has the appearance and thinness of a jack knife blade. It has no shape but conforms by its ballooning action to the space in which it is confined. The ballooning out of the applicator establishes contact in the areas of the eustachian tube, sphenoid sinus and posterior ethmoidal cells. The clinical significance of the ability to establish direct heat contacts in these otherwise inaccessible areas is evident. With a short and an ultrashort wave apparatus of 500 watt output, local treatment to the head need not exceed temperatures of 102 F. Temperatures in the sphenoidal and ethmoidal regions have been even less owing to radiation losses through the inspired air. Since the temperature of the solution circulated through the applicator is elevated to 125 F., one is certain to obtain a local temperature much higher than with short waves. The author treated four cases of ozena showing the classic signs and symptoms of atrophy, crusts and fetor. Within a week the crusts became reduced, the odor disappeared and the patients were markedly improved. The results were achieved by the physiologic reactions of the diseased tissues to the local application of heat.

## Arkansas Medical Society Journal, Fort Smith

**33:** 97-116 (Nov.) 1936

Glaucoma Simplex: Some Problems. H. Moulton, Fort Smith.—p. 97.
Cyanosis in Infancy. S. Phillips, Little Rock.—p. 99.
Treatment of Malaria: Review of Literature. W. B. Grayson and G. Hastings, Little Rock.—p. 102.

## Canadian Medical Association Journal, Montreal

**35:** 357-474 (Oct.) 1936

Malignant Nephrosclerosis (Malignant Hypertension): Report of Two Cases. L. J. Adams, Montreal.—p. 357.
Alzheimer's Disease with Neuropathologic Findings: Case. J. A. Hannah, Toronto.—p. 361.
Filling Defects in X-Ray Pictures of Stomach Due to Disease of Adjoining Structures. N. B. Gwyn and R. A. Thomas, Toronto.—p. 367.
*Carcinoma Originating in Sebaceous Cysts. D. C. Collins, Los Angeles.—p. 370.
Myasthenia Gravis: Results of Treatment in Six Cases. H. H. Hyland, Toronto.—p. 372.
Radiologic Treatment of Cancer: Methods and Results 1928-1935: II. Carcinoma Cervicis Uteri. G. E. Richards and W. G. Cosbie, Toronto.—p. 381.
Id.: III. Malignant Lesions of the Tonsil and Its Pillars. G. E. Richards, Toronto.—p. 385.
Basal Anesthesia in Children's Surgery. H. E. Coe, Seattle.—p. 390.
Pregnancy Complicated by Rheumatic Heart Disease. D. N. Henderson, Toronto.—p. 394.
Complications of Artificial Pneumothorax: A Review. T. G. Heaton, Toronto.—p. 399.
*Embolism and Sudden Thrombosis of Arteries of Extremities. R. E. McKechnie 2d, Rochester, Minn.—p. 406.
Psychologic Distinction Between Various Types of Schizophrenia. W. H. Cassels, Madison, Wis.—p. 411.
Mussel Poisoning in Nova Scotia. A. L. Murphy, Halifax, N. S.—p. 418.
Carbon Tetrachloride Poisoning. C. Young, Toronto.—p. 419.
Observations on Intestinal Flora Found in Montreal. Pauline Beregoff-Gillow, Montreal.—p. 421.

**Carcinoma Originating in Sebaceous Cysts.**—Collins tabulates the eighty-four instances, available in the literature, of carcinoma occurring in sebaceous cysts. The summarized data imply that sex is of little significance. The patients are elderly, the average age being 57.5 years. In twenty instances the average known existence of the sebaceous cyst had been 8.7 years. In 91.4 per cent the malignant sebaceous cysts were located on the head or neck. In 40 per cent of the patients it was necessary to perform two or more operations so as to remove the lesion completely. In thirty-four of the reported cases, 14.7 per cent were basal cell epitheliomas, but none of them arose from a sebaceous cyst situated in the scalp. This is of interest, as a study of fifty-eight of the reported malignant cases showed that 34.5 per cent had occurred in the scalp. Of the five patients having epidermoid carcinoma graded 3 and 4, two died from recurrence. Fourteen cases were graded 1 or 2, and no deaths were attributable to a recurrence of the carcinoma. In a clinical follow-up study made on thirty-four of the patients,

70.6 per cent were well; 14.7 per cent had died from recurrence of the epithelioma; 8.8 per cent could not be traced, and 5.8 per cent had died from causes unrelated to their previously removed malignant sebaceous cyst. Three cases of sebaceous cyst with malignant degeneration are reported. These occurred in some 9,000 routine examinations of all types of pathologic material, an incidence of about 0.033 per cent.

**Sudden Thrombosis of Arteries of Extremities.**—McKechnie points out that emboli which involve the acral arteries originate somewhere in the proximal portion of the arterial tree, in the left side of the heart or in the pulmonary veins, except the occasional paradoxical embolus, which occurs when a patent foramen ovale is present. Thrombosis of an acral artery actually occurs secondarily to some primary process in the vessel or blood, such as embolism, degenerative processes in the wall of the vessel, inflammation, trauma or increased coagulability of the blood. Thrombosis may occur in an extremity following operation. Extension of thrombosis from small arteries close to the field of operation to the larger arteries may be the explanation in some cases. However, this does not explain the sudden thrombosis of a vessel distant from the site of operation. In these cases it is possible that increased coagulability of the blood plasma, particularly if the patient is debilitated, may be one of the factors, and stagnation of the blood, which is attributable to inactivity of a limb subsequent to an operation, is probably one of the accessory causal factors when associated with unusual conditions present at the time of operation, such as severe infection or arteriosclerosis. The pathologic changes in sudden arterial occlusion of an extremity occur in the limb or in the vessel at the site of obstruction. The changes that occur in the limb are the result of the ischemia rather than of the thrombus or embolus. The changes in the vessel in the region of the occlusion vary according to the nature of the occluding factor; thus, in thrombo-angiitis obliterans, periarteritis nodosa and bacterial arteritis, signs of inflammation are present microscopically and even macroscopically. Pain is usually the initial and most frequent complaint. Other symptoms of less frequent occurrence are tingling, tenderness, cramps, itching, pallor and burning. Absence of pulsation below a given point in an artery is indicative of arterial occlusion, if a normal arterial tree is assumed to begin with. If this absence of pulsation is associated with abnormal pallor and decreased surface temperature, the diagnosis of recent arterial occlusion is justified. The prognosis in sudden peripheral arterial occlusion is not always good, as gangrene has developed in about half of the cases studied.

## Florida Medical Association Journal, Jacksonville

**23:** 159-208 (Oct.) 1936

Acute Craniocerebral Injuries from Neurosurgical Standpoint. J. G. Lyerly, Jacksonville.—p. 173.
Sulfur, a Forgotten Remedy. H. Gates, Bradenton.—p. 177.
Live Longer. L. S. Oppenheimer, Tampa.—p. 181.
Idiopathic Thrombocytopenic Purpura Haemorrhagica Treated by Splenectomy: Report of Case. C. L. Perry and J. M. McClamroch, Miami.—p. 184.
Relationship of Radiology to Pediatrics. F. J. Payton, Miami Beach.—p. 185.

## Georgia Medical Association Journal, Atlanta

**25:** 345-384 (Oct.) 1936

The Problem of the Diaphragm. A. M. Shipley, Baltimore.—p. 345.
Effect of Emotional Disturbances on Sleep. G. Giddings, Atlanta.—p. 351.
Five Unusual Fractures. J. H. Mull, Rome.—p. 359.
Friedman's Modification of Aschheim-Zondek Test for Pregnancy. G. F. Klugh, Atlanta.—p. 362.
*Antitoxin Treatment of Meningococcic Infections and Meningitis. H. J. Morrison, Savannah.—p. 365.

**25:** 385-428 (Nov.) 1936

Hypertension. S. R. Roberts, Atlanta.—p. 413.
Arteriovenous Aneurysm. D. C. Elkin, Atlanta.—p. 417.
Conservative Management of Eclampsia. E. D. Colvin and R. A. Bartholomew, Atlanta.—p. 423.

**Antitoxin Treatment of Meningococcic Infections.**—By comparing the relative efficiency of meningococcus antitoxin and antimeningococcus serum, Morrison relates the experimental and clinical progress made in the treatment of meningococcic infection. The final data of Hoyne's investigations made in three hospitals show that over a period of eighteen months 319 patients were treated, 217 receiving two well known standard brands of antimeningococcus serum with 100 deaths and 102 receiving the experimental antitoxin with twenty deaths. In Levy's series of twenty-four cases treated with meningococcus antitoxin there were six deaths. His method of administration was much the same as Hoyne's. The mortality rate in Memphis over a period of nine years prior to 1933 was 57.1 per cent. In addition to the marked reduction of the mortality rate when antitoxin is used, other observations made seem pertinent. In no instance did an ocular or auditory complication develop after the institution of antitoxin therapy. The period of hospitalization for antitoxin-treated patients averaged 16.2 days, while those receiving antimeningococcus serum averaged eighteen days. A skin sensitization test should be made when antitoxin or antiserum is given intravenously, and in doubtful cases a small amount of epinephrine may be given at the same time. Usually a serum reaction occurs at about the sixth or eighth day, when it may be necessary to control the urticaria by means of epinephrine hydrochloride. The meningococcus antitoxin has a decided advantage over the antimeningococcus serum. It is believed that, as more antitoxin is given intravenously, less will have to be given intraspinally.

## Illinois Medical Journal, Chicago

**70:** 305-396 (Oct.) 1936

Injuries to Esophagus. C. D. Sneller, Peoria.—p. 325.
Correlation of Clinical Treatment of Burns with Recent Experimental Studies. H. N. Harkins, Chicago.—p. 332.
Interpretation of Hilus Shadows in Chest X-Rays of Children. J. A. Bigler, Highland Park.—p. 338.
*Ketosis in Treatment of Epilepsy: Effects of Diacetone Alcohol on Institutional Epileptics. I. Finkelman, Chicago; W. Mary Stephens, L. B. Shapiro and De L. Sackett, Elgin.—p. 343.
Epidemic Respiratory Diseases in Early Life: Clinical Study: Preliminary Report. S. J. Wilkinson, Decatur.—p. 348.
Vasospastic Disease of Hands of Miners Due to Vibration. C. H. Drenckhahn, Urbana.—p. 354.
Irradiation Therapy of Intracranial Neoplasms. T. J. Wachowski and A. Hartung, Chicago.—p. 357.
Method of Performing Nephrostomy and Its Values. W. W. Holland, Beardstown.—p. 361.
Practical Points in Hearing Tests and Selection of Hearing Aids. R. Sonnenschein, Chicago.—p. 365.
Dermatophytosis of Feet, Hands and Groins: Clinical and Therapeutic Consideration Emphasizing the Stages of Infection. W. J. Morginson, Springfield.—p. 371.
Eugenics and Its Relation to the Community. O. Hawkinson, Chicago.—p. 376.
The Committee on Maternal Welfare. W. C. Danforth, Evanston.—p. 379.
Syphilitic Pancreatitis: Case. W. S. Siewerth, Chicago.—p. 380.
Dr. John Zahn, Pioneer German-American Physician. C. A. Earle, Des Plaines.—p. 381.
Securing Permission for Autopsies. F. P Hammond, Chicago.—p. 383.
Incapacitating Cholelithiasis in a Male Aged 20. H. O. Veach, Kewanee.—p. 387.
Medical Significance of Unrecognized Perforated Peptic Ulcer. H. A. Singer, Chicago.—p. 387.

**Ketosis in Treatment of Epilepsy.**—To determine whether the acetone bodies developed in the course of the ketogenic diet are the factors that inhibit epileptic convulsions, Finkelman and his associates treated eleven institutional epileptic patients with diacetone alcohol. From 2 to 6 drachms (8 to 24 cc.) of the drug were given daily during two periods of treatment. The first period was from forty to fifty days and the second was fifty days. There was an intervening period of twenty-five days during which no medication was given. It was found that diacetone alcohol was not anticonvulsant in institutional epileptic patients. The urine in seven patients was positive for acetone and there was no correlation between the number and severity of the seizures and the acetone reaction in the urine. The blood sugar was increased in four patients and lowered in one. Diacetone alcohol was injected intravenously into six rabbits in order to ascertain the relation of this drug to blood sugar. It was found that there was a definite increase in the blood sugar level following the administration of this drug. The discrepancy in the action of diacetone alcohol in human epilepsy and in the thujone convulsions in rabbits is probably due to a failure of obtaining a sufficiently high ketone blood level in human epilepsy at the time a convulsive seizure is imminent. The ketogenic diet may be more efficacious in maintaining a high ketone blood level than the administration of the ketone bodies as such. However, it is more likely that the results

obtained with the ketogenic diet are due to the shifting of intracellular fluid and potassium across the cell membrane that accompanies a strongly ketogenic diet. The rise in blood sugar caused by diacetone alcohol is due to an inhibition of insulin activity which this drug probably causes.

## Indiana State Medical Assn. Journal, Indianapolis

**29:** 559-614 (Nov.) 1936

Medical Progress: History Forecasts. R. L. Sensenich, South Bend. —p. 559.
A Critical Evaluation of Recent Advances in Contagious Diseases. J. A. Toomey, Cleveland.—p. 563.
Head Injuries. R. L. Glass, Indianapolis.—p. 568.
Constipation and Cathartics. C. O. Richey, Evansville.—p. 571.
Reverse Spondylolisthesis: Case Report. E. T. Stahl, Lafayette.—p. 574.
Closer Cooperation Among Physicians. E. H. Brubaker, Flora.—p. 576.

## Journal of Immunology, Baltimore

**31:** 167-256 (Sept.) 1936

Active Immunization Against Poliomyelitis: Comparative Study: I. Attempts at Immunization of Monkeys and Children with Formalized Virus. S. D. Kramer, Brooklyn.—p. 167.
Id.: II. Experimental Immunization of Monkeys with Virus Treated with Sodium Ricinoleate. S. D. Kramer and L. H. Grossman, Brooklyn.—p. 183.
Id.: III. Active Immunization of Monkeys with Exactly Neutralized Mixtures of Virus and Serum. S. D. Kramer, Brooklyn.—p. 191.
Id.: IV. Experimental Immunization of Monkeys with Purified Virus, Adsorbed on Aluminum Hydroxide. S. D. Kramer, L. H. Grossman and B. Hoskwith, Brooklyn.—p. 199.
Vitamin C and Anaphylactic Shock in Guinea-Pigs. B. Solomonica, New York.—p. 209.
Serum Sickness in Rabbits: VI. Influence of Removal of Lipids from Serum on Occurrence of Serum Sickness. L. Jones and M. S. Fleisher, St. Louis.—p. 215.
Studies on Mechanism of Immunity in Typhus Fever: III. Demonstration of Opsonins for Rickettsia Prowazeki in Typhus-Immune Serum. M. Ruiz Castaneda, Boston.—p. 227.
Availability of Specific Pneumococcus Antibody After Intravenous, Intramuscular and Subcutaneous Injection: Including Study of Cutaneous Reactions to Type-Specific Polysaccharides Following Serum Injection. R. C. Tilghman and M. Finland, Boston.—p. 239.

## Journal of Infectious Diseases, Chicago

**59:** 131-224 (Sept.-Oct.) 1936

Effect of Chemical Constitution of Soaps on Their Action on Diphtheria Toxin. M. Bayliss, Minneapolis.—p. 131.
Characteristics of Small Colony Variants, with Especial Reference to Shigella Paradysenteriae Sonne. B. D. Chinn, Chicago.—p. 137.
*Experimental Rabies in White Mice II: Studies on Passive Immunization. A. Hoyt, R. T. Fisk, F. J. Moore and R. L. Tracy, Los Angeles.—p. 152.
Occurrence of Bacillus Necrophorus Agglutinins in Different Species of Animals. W. H. Feldman, H. R. Hester and F. P. Wherry, Rochester, Minn.—p. 159.
Production of Heterophile Antigen by Certain Bacteria and Plants. G. E. Rockwell and H. C. Van Kirk, Cincinnati.—p. 171.
Bacterial Resistance in B-Deficient Dogs. S. B. Rose and W. B. Rose, Philadelphia.—p. 174.
Improved Spiral Glass Electrode and Vacuum Tube Potentiometer Applied to Measurement of Serum Hydrogen Ion Concentration in Experimental Streptococcic Infections in Rabbits. P. J. Hartsuch, Chicago.—p. 183.
Study of Some Acid-Fast Actinomycetes from Soil, with Especial Reference to Pathogenicity for Animals. Ruth E. Gordon and W. A. Hagan, Ithaca, N. Y.—p. 200.
Local Points of Defense and Passive Transfer of Acquired Immunity to Nippostrongylus Muris in Rats. M. P. Sarles and W. H. Taliaferro, Chicago.—p. 207.
Experimental Syphilitic Keratitis in Rabbit. A. J. Gelarie, New York.—p. 221.

**Passive Immunization in Experimental Rabies.**—Hoyt and his co-workers were able to build immunity in white mice sufficiently high to protect a moderate percentage of animals against intracerebral inoculation of the Cutter strain of fixed virus. An extremely high type of such an immunity may be developed against this virus when it is introduced by the intramuscular route. However, it was necessary to introduce antiserum within a relatively short interval before the inoculation of virus. Antiserum given intraperitoneally showed its greatest effect when injected four days or less before the virus. It was relatively ineffective on injection ten days before the virus and appeared entirely lacking in protective properties when administered sixteen days before the infecting dose of virus. The intracerebral administration of serum at an interval of twenty-four hours before the virus was sufficient to decrease greatly the efficacy of passive immunization. Serum antibodies can neutralize virus in vivo only if they reach the virus before it has had time to gain sufficient access to its tissues of choice. An alternative explanation, recently discussed by Sabin, would necessitate that contact be made between antiserum and the susceptible cells either before or when these cells come into contact with the virus.

## Michigan State Medical Society Journal, Lansing

**35:** 627-688 (Oct.) 1936

Some Significant Contributions to Basic Sciences Made in Michigan. G. C. Penberthy, Detroit.—p. 627.
Undulant Fever: Brucellosis; Melitensis; Malta Fever; Mediterranean Fever. C. E. Vreeland, Detroit.—p. 632.
Diseases of Kidney: Differential Diagnosis. R. E. Cumming, Detroit. —p. 638.
Study of Epilepsy in Detroit: Preliminary Report. O. P. Kimball, Cleveland, and D. W. Gudakunst, Detroit.—p. 641.
Principles of Diet Therapy. S. S. Altshuler, Detroit.—p. 645.
Interpretation of Encephalograms. R. N. De Jong and R. W. Waggoner, Ann Arbor.—p. 652.
Suction Apparatus. R. V. August, Muskegon Heights.—p. 657.
Physical Therapy in Dermatology. L. Orecklin, Detroit.—p. 659.

## Missouri State Medical Assn. Journal, St. Louis

**33:** 407-438 (Nov.) 1936

*Cancer Viewed as a Preventable Disease. M. P. Neal, Columbia.—p. 407.
Determination of Type of Treatment for Cancer from Pathologic Studies. F. C. Helwig, Kansas City.—p. 413.
Diagnosis and Treatment of Early Cancer of the Breast. R. E. Schlueter, St. Louis.—p. 416.
Cancer of Rectum. E. Fischel, St. Louis.—p. 419.
Management of Lymphatic Areas Tributary to Oral Cancer. E. C. Padgett, Kansas City.—p. 423.

**Cancer Prevention.**—Neal states that a concerted move toward cancer prevention requires that: 1. Cancer prevention be taught by a more intensive and practical instruction of medical students on the subject of precancerous conditions and by frequent postgraduate reviews for the practitioners of medicine by men interested, qualified and enthusiastic in this field. 2. Cancer prevention should be preached by participating actively in the efforts to enlighten and instruct members of the profession and the public in matters pertaining to cancer, especially the possibilities and importance of its prevention. 3. In the practice of cancer prevention the desirability of regular and stated examinations for the detection of disease processes should be advocated. 4. Cancer should be approached from the point of view of prevention. Group team work including social, clinical and pathologic studies under suitable conditions promises much in the field of cancer investigation. The neglect of and the indifference to such studies are detrimental to the further acquisition of knowledge of cancer.

## New York State Journal of Medicine, New York

**36:** 1473-1586 (Oct. 15) 1936

Induced Hypoglycemic State in Treatment of Psychoses. B. Glueck, Ossining.—p. 1473.
Malignant Neoplasms of Colon. F. W. Rankin, Lexington, Ky.—p. 1485.
Streptothrix and Monilia Infections as Clinical Entities. R. H. Irish, Troy.—p. 1491.
Sympathetic Ophthalmia Following Intra-Ocular Operations. H. H. Joy, Syracuse.—p. 1498.
Present Status of Surgical Treatment of Retinal Detachments. M. J. Schoenberg, New York.—p. 1503.
Report of Poisoning by Cicuta Maculata: Water Hemlock. D. R. Haggerty, Arkport, and J. A. Conway, Hornell.—p. 1511.
*Arthritis: Blood Changes in Arthritis. R. L. Cecil, New York.—p. 1515.
Use of Heat in Care of Arthritic Patient. S. L. Warren and Emmy Lehmann, Rochester.—p. 1523.
Treatment of Arthritis, with Particular Reference to Vaccines and Allergic Reactions. C. H. Hitchcock, Syracuse.—p. 1527.
Economic Problems of Physical Therapy. S. E. Bilik, New York.—p. 1533.
Subcutaneous Rupture of Stomach: Review of Literature and Report of Case. N. J. Wolf, Buffalo.—p. 1539.
Differential Diagnosis of Conditions Associated with Sugar Excretion. W. G. Exton, New York.—p. 1545.
Cooperation of Patients in Early Diagnosis and Treatment of Pulmonary Tuberculosis. J. H. Korns, Olean.—p. 1554.
Gallstones in Appendix: Case Report. F. J. Lennon, Buffalo.—p. 1557.
Hormone Control of Uterus. R. Kurzrok, E. G. Miller and Jessie Reed Cockrill, New York.—p. 1558.
Between Mental Health and Mental Disease. B. Liber, New York.—p. 1561.

**Blood Changes in Arthritis.**—Cecil contends that of the five most common types of arthritis (gonococcic arthritis, rheumatic fever, rheumatoid arthritis, osteo-arthritis and gout), with the exception of osteo-arthritis, there are fairly reliable

blood tests for each: the complement fixation test for gonorrheal arthritis, the antistreptocolysin test for rheumatic fever, the agglutination reaction for rheumatoid arthritis and the blood uric acid determination for gout. The least dependable of these tests is the antistreptocolysin determination in rheumatic fever. The other three tests can be considered fairly reliable and practical in their clinical application. Not nearly enough use is being made of the streptococcus agglutination reaction in the diagnosis of rheumatoid arthritis. The author has found this test of great practical value in differential diagnosis. It seems fairly certain that streptococci of various types can be recovered not infrequently from the blood of patients with various acute infections and chronic constitutional disorders. In most instances they probably have little or no significance. In rheumatoid arthritis, however, streptococci can frequently be recovered from the blood, and positive streptococcus agglutination and precipitation reactions can be obtained in a high proportion of patients with the disease.

## Northwest Medicine, Seattle

**35:** 365-402 (Oct.) 1936

Problems Confronting Us Today. D. F. Bice, Yakima, Wash.—p. 365.
The Spectre of State Medicine. J. H. Crampton, Lewiston, Idaho.—p. 367.
Acute Coronary Thrombosis. K. Winslow, Seattle.—p. 369.
Influenza and the Common Cold. R. L. Cecil, New York.—p. 376.
Diverticulum of Female Urethra. E. R. Hall, Vancouver, B. C.—p. 379.
Carcinoma of Small Bowel: Case Reports. J. M. Bowers and B. P. Mullen, Seattle.—p. 380.
Venereal Disease Control in Washington. W. R. Jones, Seattle.—p. 385.

## Ohio State Medical Journal, Columbus

**32:** 925-1048 (Oct. 1) 1936

Chronic Ulcerative Colitis in Childhood. H. F. Helmholz, Rochester, Minn.—p. 941.
Extra-Articular Disabilities of Shoulder Joint. R. S. Reich, Cleveland.—p. 946.
Unusual Cases of Foreign Bodies in Food and Air Passages. H. E. Mitchell, Lakewood.—p. 950.
*Laparotrachelotomy: Clinical Appraisal, S. B. Conger, Akron.—p. 955.
Preventive Procedures in Infancy. T. K. Selkirk and J. V. Greenebaum, Cincinnati.—p. 959.
Relation of Insulin Requirement of Weight Increase in Diabetic Children. H. J. John, Cleveland.—p. 965.
Modern Concept of Treatment of Malignancies with Radium. W. M. Millar, Cincinnati.—p. 967.
Invasion of Female Generative Tract by Ascaris Lumbricoides: Case Report. R. Sterling, El Centro, Barranca-Bermeja, Colombia, South America.—p. 970.
Postpartum Care of Uterine Cervix. J. I. Hofbauer, Cincinnati.—p. 971.
Endocrine Obesity. H. A. Gusman, Cleveland.—p. 973.
Possible Errors Which May Appear in Normal Electrocardiogram. J. E. Benjamin, H. Lederer and H. Landt, with technical assistance of N. Aronoff, Cincinnati.—p. 977.
Akinesia Algera. L. A. Miller, Toledo.—p. 981.
Hypertension in Child: Case Report. P. S. Ross, Columbus.—p. 983.

**Laparotrachelotomy.**—Conger believes that low cervical section is a much safer operation, especially in cases of potential infection. It allows a good trial of labor with comparatively little additional risk, thereby eliminating many unnecessary sections. Technically it is not a difficult operation, especially after a trial labor, when thinning of the lower segment and loosening of the uterovesical peritoneum make it a simple procedure. The numerous advantages over the classic justify the ten or fifteen extra minutes required for its performance. Patients delivered by low section are much more comfortable and are spared many grave complications attending classic delivery under the same conditions. Three of the author's patients had been delivered previously by classic sections. Following laparotrachelotomy, they were all favorably impressed by the greater comfort and smoothness of their convalescence. Low section is neither a cure-all for every case of dystocia nor a fool proof operation. Delivery of the septic patient by laparotrachelotomy will be as tragic as delivery by classic section. Patients with a temperature of 101 F. or higher should not be delivered abdominally. The history of long labor, ruptured membranes and careless vaginal examinations help in differentiating septic cases. Craniotomy in this type of case will reduce the maternal deaths. If this is refused, Porro section should be the method of abdominal delivery. The risk in the abdominal delivery in hemorrhagic cases is directly proportional to the time during which bleeding has been going on. Refraining from vaginal examinations on prospective candidates for section will reduce the postoperative reaction even in delivery by laparotrachelotomy.

## South Carolina Medical Assn. Journal, Greenville

**32:** 229-252 (Oct.) 1936

Some Bedside Observations on the Dying. R. P. Finney, Spartanburg.—p. 229.
Mikulicz's Disease. T. R. Gaines, Anderson.—p. 232.
Early Diagnosis of Acute Appendicitis. D. O. Rhame Jr., Clinton.—p. 233.
Blood Transfusion. D. F. Adcock, Columbia.—p. 236.

**32:** 253-278 (Nov.) 1936

Psychology of Subnormal Individuals. B. O. Whitten, Clinton.—p. 253.
The Care of Acute Head Injuries. C. O. Bates, Greenville.—p. 260.
Cardiac Pain. A. I. Josey, Columbia.—p. 263.

## Southern Medical Journal, Birmingham, Ala.

**29:** 953-1044 (Oct.) 1936

*Pain Syndromes in Upper Urinary Tract: Their Mechanisms and Clinical Management. L. D. Keyser, Roanoke, Va.—p. 953.
Self-Inflicted Injuries in Civil Practice: Report of Fourteen Cases. D. Hart and R. Jones Jr., Durham, N. C.—p. 963.
Demonstration of Ruptured Popliteal Aneurysm by Thorium Dioxide Arteriography. W. M. Yater, Washington, D. C.—p. 973.
Myoma Malignum of Uterus: Report of Five Cases. L. T. Carl, Memphis, Tenn.—p. 976.
Retroversion, Descensus and Deep Culdesac, with Suggested Improvement in Corrective Technic. O. J. Potthast, San Antonio, Texas.—p. 983.
*Gonorrheal Osteomyelitis of Vertebrae. R. A. Woolsey, St. Louis.—p. 990.
Pyogenic Osteomyelitis of Pelvis: Clinical Summary of Ninety-One Cases. J. Kulowski, St. Joseph, Mo.—p. 994.
Relationship of Maxillary Sinusitis to Infection in Contiguous Sinuses, Middle Ear and Lower Respiratory Tract. P. L. Mahoney, Little Rock, Ark.—p. 999.
Some Clinical Aspects of Head Pain Associated with Sympathetic Phenomena. J. A. Brown, Houston, Texas.—p. 1002.
Banana Therapy in Diarrheal Diseases in Infants and Children: Preliminary Report. C. L. Joslin, Baltimore.—p. 1007.
Seborrhea and Its Effect on Ocular Diseases. M. T. Van Studdiford, New Orleans.—p. 1012.
Four-Quarter System at the University of Tennessee. L. W. Diggs, Memphis, Tenn.—p. 1014.
An Unusual Medicolegal Problem. A. P. Jones, Roanoke, Va.—p. 1021.
House Dust Antigen in Allergy. A. G. Cazort, Little Rock, Ark.—p. 1022.
Leukocyte Counts in Malaria: Analysis of 100 Cases. Eleanor Winthrop Townsend, Charleston, S. C.—p. 1026.
Individual Chemoprophylaxis Against Malaria: Preliminary Report. M. E. Winchester, Brunswick, Ga.—p. 1029.
Undulant Fever in Barren County, Kentucky. O. A. Beatty, Glasgow, Ky.—p. 1029.
Uremia Following Blood Transfusion. O. C. Hansen-Pruss and B. N. Miller, Durham, N. C.—p. 1033.

**Pain Syndromes in Upper Part of Urinary Tract.**—Keyser takes the conservative course in dealing with pain syndromes and stasis mechanisms in the upper part of the urinary tract. The indwelling catheter or dilation with bulbs has in his experience given complete to partial symptomatic relief in from 60 to 80 per cent of a series large enough (167 cases) to warrant conclusions. He is certain that many of these patients would have been subjected to nerve-cutting operations and fixations by others and that in certain instances a greater degree of relief might have been obtained. Nevertheless, operative procedures in patients with unbalanced autonomic nervous systems are frequently unsatisfactory. Also he feels that the indwelling catheter and ureteral bougie, if used cautiously, will relieve or hold at a standstill many of these pathologic processes, so that surgery will become unnecessary. For this reason he contends that conservative ureteral dilation before resorting to surgery is a method worthy of trial, not necessarily on the basis of a high incidence of organic ureteral stricture but as a physical therapeutic attempt to readjust an unbalanced neuromotor dysfunction.

**Gonorrheal Osteomyelitis of Vertebrae.**—Woolsey reports the case of a man of 43 who was admitted to the hospital Aug. 9, 1934, giving a history of pain in the back six days previously. Physical examination was negative except for pain and slight tenderness in the upper lumbar region rather to the right of the midline. Urinalysis showed one plus albumin and many pus cells. The venereal history was negative. Roentgenograms of the lumbar spine showed moderate arthritic changes of hypertrophic type. There was no urethral discharge, nor did

pus in the urine show gonococci. Blood August 12 failed to agglutinate Bacillus typhosus, Bacterium tularense, Brucella abortus or melitensis or Streptococcus viridans and gave negative agglutination tests on three succeeding examinations. The last negative culture was reported on August 28. Cystoscopy was done the following day. The bladder, ureters and kidney pelvis were negative to plain roentgenograms and pyelograms. The temperature ran from about 100 to 104 F. for the first week and then dropped down about 1 degree. During this time most of the complaint was in the region of the right kidney and was much more pronounced when the patient turned over or lay on his right side. September 12 the author felt that he could detect a slight difference on the two sides, and thought of perinephric abscess. He introduced a needle on the right side and found pus and operated the following morning. Intracellular and extracellular gram-negative gonococci were found, and complement fixation for gonococci was plus four. The following morning roentgenograms demonstrated destruction of a large portion of the vertebra in contradistinction to the last picture taken ten days previously. Following the operation the temperature dropped perceptibly, the pulse rate remaining about the same. By September 25 the white count was 8,350 and the red count was 1,350,000 with a hemoglobin of 40 per cent. The patient was given a transfusion, which was followed by a chill and a temperature of 107 F., after which improvement was satisfactory. October 19, roentgenograms showed destruction of half of the second lumbar vertebra. From the time of operation the patient was carried on a Bradford frame until November 15, when a cast was applied in hyperextension, opening in the back for dressings. The temperature ranged to 100 F. each day. He complained of more or less pain in the region of the bladder and on micturition. By January 1 this became so pronounced that irrigations were made daily. January 9 the strictured urethra was dilated under cocaine, after which a retention catheter was left in place for a week with daily irrigations. Occasional constant drainage for a few days and irrigations almost daily were necessary until April 1. May 7 a Taylor brace was applied and the patient was allowed to sit up. In a short time he was getting around very nicely. He left the hospital June 16, 1935, with very little fever and a normal blood picture. September 17, gonococcus complement fixation was still four plus.

## Tennessee State Medical Assn. Journal, Nashville

**29:** 337-376 (Sept.) 1936

Study of Toxemias of Late Pregnancy. E. G. Wood, Knoxville.—p. 337.
Hyperparathyroidism with Renal Calculus. S. S. Riven and M. F. Mason, Nashville.—p. 345.
Impacted Dental Plate in Larynx: Removal by Suspension. E. L. Myers, St. Louis.—p. 355.
Poliomyelitis. J. B. Wright, Lynnville.—p. 357.

## Texas State Journal of Medicine, Fort Worth

**32:** 381-444 (Oct.) 1936

Relief of Pain During Childbirth. L. M. Randall, Rochester, Minn.—p. 385.
*Infant Mastoiditis: Its Management, with Particular Reference to X-Ray Diagnostic and Therapeutic Possibilities. C. F. Crain and J. M. Sloan, Corpus Christi.—p. 388.
Reactive Blood Cells in Acute Infections. M. P. Neal, Columbia, Mo.—p. 397.
Paroxysmal Hemoglobinuria: Case Report. S. J. Lewis and T. A. Fears, Beaumont.—p. 403.
Connell Cancer Treatment: Its Present Status. C. Phillips, Temple.—p. 406.
Antrums and Certain Persistent Headaches: Consideration of Sluder Syndrome in Particular. C. B. Williams, Mineral Wells.—p. 408.
Mobile Colon. A. Small, M. O. Rouse and C. O. Patterson, Dallas.—p. 410.
*Prolonged Continuous Sleep Treatment: Its Results in Psychiatry, with Discussion of Its Place in Modern Medicine. G. W. Day, Galveston.—p. 417.
Some Child Behavior Problems. L. O. Godley, Fort Worth.—p. 422.
Agranulocytic Angina. W. J. Stork, Galveston.—p. 427.

**Diagnostic and Therapeutic Possibilities of Roentgenology in Infant Mastoiditis.**—Crain and Sloan present twenty cases of infant mastoiditis that stress the diagnostic possibilities of roentgenology and present the possibilities of roentgen therapy. The percentage of mortality in the cases presented is much less than that reported for surgery or nonsurgical cases. All patients were less than 26 months of age, and all had roentgen evidence of mastoid infection. Relatively fewer infants have been operated on for mastoiditis by the authors since roentgen therapy has been tried. The roentgenogram of an infant mastoid will show a fairly constant type of development for a given age. The semicircular canals which are visible in the younger infant begin to lose their identity as age progresses. The antrum is often not visualized, owing to presence of embryonic tissue within it, but its form is generally outlined to some degree. There is no cellular development, but there is a distinctly outlined "premastoid" area visible posteriorly and inferiorly from the antrum. This area is composed of cancellous bone, which shows the trabeculations observed in other cancellous bone. It is roughly triangular, but as development progresses it assumes a spherical or ovoid outline. The lateral sinus is not normally visible in the infant mastoid. When infection takes place in the middle ear of an infant, it easily finds a pathway to the antrum, from which point it can readily infect the cancellous tissue of the premastoid area. When the infection is confined to the antrum, it may be possible to demonstrate a definite cloudiness of this area. A comparison with the opposite side is essential, as the normal antrum may be cloudy. If the infection involves the cancellous "premastoid" area, there are visualized changes, which in this structure are comparable to the changes that may be observed in the pneumatized mastoid. There may be a haziness of the region; the trabeculae may be fuzzy, thickened or absorbed. As the infection progresses, there is absorption of bone and the lateral sinus becomes visible, a positive sign of destruction in the infant mastoid. Roentgen irradiation is beneficial, is often curative, and has a definite place in the treatment of this condition. The benefits of radiation therapy in infant mastoiditis arise from the direct action of radiation on acute infections and from its indirect effect on the pathologic process by the production of drainage. Embryonic tissue is extremely radiosensitive, and it is reasonable to suppose that sufficient dosage of x-rays will cause a shrinking of this tissue and will, in fact, produce a nonsurgical drainage of this area. Collections of adenoid tissue about the pharyngeal opening of the eustachian tube may also block drainage. Lymphoid tissue is also radiosensitive and it is possible that this will shrink and promote adequate drainage from the middle ear.

**Prolonged Continuous Sleep Treatment.**—Day employed the prolonged continuous sleep method of Witt and Cheavens in treating various cases of mental disorders. Each drachm of the standard sleep mixture contains 1 grain (0.065 Gm.) of phenobarbital sodium and 5 grains (0.3 Gm.) of barbital sodium dissolved in peppermint water and colored red. Two drachms (8 Gm.) of this mixture is usually given every four hours until sleep has been induced, then 1 drachm (4 Gm.) often enough to maintain the desired state of somnolence, which varies usually from one to six times in twenty-four hours. Fecal impactions are guarded against by a daily soapsuds enema, magnesium sulfate once a week, and two or three ounces of vegetable oil. Attention to food is second only to caution against barbital poisoning in these patients. They eat much better when undergoing continuous sleep treatment, and, while they have to be spoon fed, much patience and time are devoted in giving them nourishing food, of a nonresidue character. In cases of serious emaciation, persistent vomiting or unusually severe agitation the patient is rendered completely comatose and tube fed two or three times a day. Tube feedings consist of milk, eggs, sugar, salt, vegetable oil, tomato juice and brewers' yeast, about 1,800 cc. daily, containing from 2,300 to 3,000 calories. After this type of therapy, manic and depressed patients awake, almost without exception, refreshed and rested, with a considerable gain in weight and a completely new outlook on life. This improvement usually progresses to complete recovery in a short time. Schizophrenic and involution psychotic patients frequently show the same type of improvement for from three to ten days and then begin to regress. Patients having involutional melancholia, hysteria, anxiety states or maladjustments show very little improvement. The results are so uniform that one can almost make a diagnosis by the patient's course after continuous sleep treatment. Hysterias are not nearly so uniform. The average duration of sleep was 20.4 days, the shortest being three days and longest seventy-eight days. The author believes that in manic

patients the elevation of mood leads to an extravaganza of ideas and both lead to greatly increased motor activity. Increased motor activity stimulates an increase of mental activity and thus a vicious circle of cause and effect is developed. Sleep breaks this vicious circle. It is also probable that the undernourishment and cerebral impoverishment which result from lack of food and increased psychomotor activity further aggravate the mental aberration, producing another vicious circle, which is interrupted by the increased food intake and reduced activity under continuous sleep treatment. The depressed patients seem to derive their beneficial results from the long respite from their unhappy, melancholy thoughts. Involutional depressions seem to derive somewhat the same result, although the author is convinced that involutional psychoses are organic, probably endocrine, in origin rather than purely affective. In schizophrenia the disorder is one of intellect. Therefore nothing more than transitory improvement due to temporary relief from thinking can be expected.

## Virginia Medical Monthly, Richmond

**63:** 395-458 (Oct.) 1936

Function of State Bureau of Mental Hygiene. J. N. Williams, Richmond.—p. 395.
Treatment of Fractures of Hip by Use of Smith-Petersen Pin. M. A. Johnson Jr., Roanoke.—p. 397.
Extensive Vesicovaginal Fistula with Uretero-Intestinal Anastomosis: Case Report. E. S. Groseclose and H. H. Hurt, Lynchburg.—p. 405.
Tuberculosis Education: How Far Have We Progressed? W. F. Wild, Mamie H. Jackson and Verna McGuriman, Suffolk.—p. 408.
Cancer of Tongue: Some Etiologic Considerations: Report of Case with Stone in Wharton's Duct as Cause. C. W. Trexler, Honolulu, Hawaii.—p. 412.
Secondary Anemias and Their Treatment. G. L. Weller Jr., Washington, D. C.—p. 415.
Tuberculous Peritonitis Due to Bovine Type from Same Farm: Report of Two Cases. M. H. Harris, West Point.—p. 418.
Unusual Case of Stricture of Esophagus. E. U. Wallerstein, Richmond.—p. 420.
Dedication to Students in Medicine. T. C. Merrill, Paris, France.—p. 423.
Proposed Immunization Program. A. B. McCreary, Eastville.—p. 426.
Auricular Fibrillation: Clinical Significance. H. Golston, Roanoke.—p. 428.

## Western J. Surg., Obst. & Gynecology, Portland, Ore.

**44:** 563-618 (Oct.) 1936

Overlooked Common Duct Stone. H. K. Bonn, Los Angeles.—p. 563.
Reconstruction of Voluntary Anal Sphincter. T. F. Mullen, San Francisco.—p. 567.
Cervical Rib and Anterior Scalenus Syndrome. P. G. Flothow, Seattle.—p. 570.
Couvelaire Uteroplacental Apoplexy with Complete Separation of Placenta and Concealed Hemorrhage. M. J. Abramson, Los Angeles.—p. 575.
Paraffin Dressing for Transplanted Grafts. D. V. Trueblood, Seattle.—p. 578.
Response of Exophthalmic Goiter or Graves' Disease to Irradiation of Pituitary and Adrenals. J. H. Hutton and E. E. Madden, Chicago.—p. 579.
Goiter in Georgia: Statistical Study of 542 Cases. T. C. Davison and D. H. Poer, Atlanta, Ga.—p. 587.

**Cervical Rib and Anterior Scalenus Syndrome.**—Flothow has recently seen several patients in whom the symptoms of brachial plexus irritation have been due to anatomic anomalies of the supraclavicular triangle. The anterior scalenus muscle by virtue of its relation to the first rib and the brachial plexus and subclavian artery may produce symptoms similar to those of cervical rib. Treatment of the condition, the anterior scalenus syndrome, is section of the anterior scalenus muscle. The operation of tenotomy of the anterior scalenus muscle has replaced that of resection of cervical ribs which are causing symptoms. This operation is much safer, is unaccompanied by unfavorable postoperative sequels and gives more satisfactory results than resection of the rib. Four cases are presented: one of definite cervical ribs, one of rudimentary nubbins of ribs and two of the anterior scalenus syndrome in which tenotomy of the anterior scalenus muscle has been performed. In the one case with definite cervical ribs the result has not been very satisfactory. The history was atypical and it is probable that the ribs were not causing all the symptoms of which the patient complained. There has been some improvement, but many of his complaints persist. In the three cases without cervical ribs the results have been excellent.

# FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Dermatology and Syphilis, London

**48:** 473-526 (Oct.) 1936

Pyrethrum Dermatitis. J. H. Sequeira.—p. 473.
Relation of Water Metabolism to Experimental Skin Infections. G. V. Kulchar and H. E. Alderson.—p. 477.
Pemphigus Neonatorum. A. K. Bowman.—p. 484.
Intravenous Injections of Charcoal in Treatment of Skin Disease. E. Davis.—p. 491.

## British Journal of Ophthalmology, London

**20:** 561-608 (Oct.) 1936

The Eye in Leprosy. E. F. King.—p. 561.
Inheritance of Opaque Nerve Fibers in Retina (Papilla Leporina). E. A. Cockayne.—p. 569.
Results of Intra-Ocular Inoculation of Trachoma (on Question of "Follicle-Building Agent" of Von Szily). P. Kiewe.—p. 576.

## British Journal of Radiology, London

**9:** 631-694 (Oct.) 1936

Influence of X-Radiation on Stability of Ferric Oxide Sol. J. A. Crowther, H. Liebmann and C. C. Mills.—p. 631.
*Radiology of Facial Bone Fractures. H. G. Hodgson.—p. 637.
Three Radiographic Zones of Simple Pleural Effusions. J. Kaunitz.—p. 644.
Testing and Measurement of Radium Containers at the National Physical Laboratory. W. E. Perry.—p. 648.
Malignancy in Skin. J. F. Bromley.—p. 659.
Radical X-Ray Treatment of Carcinomas. R. Paterson.—p. 671.
Spectral Distribution in Continuous X-Ray Spectrum and Specification of X-Ray Quality. G. E. Bell.—p. 680.
Photographic Action of Radium Gamma Rays. G. E. Bell.—p. 688.

**Radiology of Facial Bone Fractures.**—Hodgson asserts that the most certain method of recognizing fractures of the facial bones is roentgenologic, but, unless the examination is carried out with a full knowledge of the anatomy of the parts and the mechanics of this type of fracture, the injury may even then escape notice. The roentgenologist has to take into account the direction of the force, visualize the plane of the possibly resulting fracture and take roentgenograms so as to view it tangentially, and with the correct degree of roentgen penetration to throw the particular bone or bones concerned into relief. The stereotyped anteroposterior and lateral roentgenograms of the skull will show one little or nothing of this type of injury, and special views have to be taken with this particular object in view. In fractures of the nasal bones the axial view is taken with the chin resting on the film and the head thrown back at an angle of 30 degrees with the horizontal, the tube being tilted 30 degrees toward the feet. This causes the central ray to pass axially down the nose, giving one an "end on view." In fractures of the malar bones only by directing the rays at right angles to the line of force, as described in the axial view of the nasal bones, can one see that the lower orbital margin has been fractured through the foramen and the whole of the malar portion displaced bodily backward into the antrum. The best view to show fractures of the zygoma is the verticomental view, the rays being centered at right angles to the vertex. Fractures close to the symphysis are often concealed in an anteroposterior view, as the shadow of the cervical spine is superimposed. They are best shown by rotating the patient's head slightly to one side and directing the rays obliquely upward on to the film. A fracture of the horizontal ramus is best shown by directing the rays obliquely upward, so as to throw the uninjured jaw clear of the injured side. The temporomandibular joint is well seen if the head is placed in the lateral position, with the injured side against the film and the rays directed downward at an angle of 30 degrees.

## East African Medical Journal, Nairobi

**13:** 163-196 (Sept.) 1936

Controlled Experiment in Medicine. W. A. Wilson.—p. 164.
Tropical Diseases of the Southern Sudan: Their Distribution and Significance. A. Cruickshank.—p. 172.
Significance of Trachomatous Conjunctivitis. R. Y. Stones.—p. 177.
Human Rabies in the Central Province of Tanganyika: Case. D. E. Wilson and H. Singh.—p. 185.

## Edinburgh Medical Journal

**43:** 609-656 (Oct.) 1936

Clinical Recollections and Reflections: VI. Remarks on Symptom of Cough in Relation to Chronic and Acute Illness in Childhood. C. McNeil.—p. 609.
*So-Called Spontaneous Arachnoid Hemorrhages. K. H. Bouman.—p. 618.
Some Modern Problems Connected with Cerebrospinal Fluid. J. G. Greenfield.—p. 622.
Observations on Primary Lung Carcinoma. M. El Gazayerli.—p. 636.
The Problem of the Industrial Cripple, Surveyed Especially in the South-east of Scotland. D. S. Middleton.—p. 641.

**So-Called Spontaneous Arachnoid Hemorrhages.**—Bouman believes that subarachnoid hemorrhages caused by leakage from aneurysms, called spontaneous because the underlying cause is unknown, are comparatively frequent. The conditions that favor the origin and growth of such aneurysms are discussed. Apart from cases in which in advanced age arteriosclerotic changes of the vessels are evident, cases showing precedent syphilitic infection or those in which an injury of the skull has brought about a rupture of the blood vessels, so-called spontaneous hemorrhages in young and otherwise healthy persons are difficult to account for. Such bleedings in young persons are usually supposed to be due to some developmental defect, but this defect cannot be—in the author's opinion—a so-called congenital weakness of the vessel wall. He is convinced that there must be another cause behind all this to explain that weakness and the eventual rupture. This ultimate cause may be the real congenital factor. Ruptured aneurysms in young persons are mostly—at least in his postmortem cases—accompanied by a variation in the ramifications of the blood vessels. The frequency of this anomaly is undoubtedly much greater than in other varieties of brain disease. These variations in the ramifications of the circle of Willis are mostly of the same type. This coincidence of congenital variations and spontaneous bleedings cannot be accidental. If this is right, he believes that one must conclude that in the case of such anomalies the conditions of the blood currents in the circle of Willis have changed completely and that the normal static and dynamic conditions are disturbed greatly. If the normal communication between the basilar artery and the arteria cerebri posterior is blocked (or almost blocked) on one side, the whole current is led through the arteria communicans posterior on the other side. But this relatively small vessel is also subjected to the high pressure of the internal carotid. The effect can only be that two mighty currents of the blood circulation meet together in this small vessel, originally not built to resist these currents. Moreover, this particular vessel is subjected to the entirely opposed currents of the internal carotid and the basilar artery. As soon as the wall is weakened by the perpetual currents, an aneurysm may easily be formed and increased by whirlpools made by these directly opposed currents. Hence the "supposed weakness" of the vessel wall. There can be only one end of this process, viz., the so-called spontaneous rupture of the vessel. In this way the arachnoid bleedings in young and otherwise healthy persons may be satisfactorily accounted for.

## Glasgow Medical Journal

**8:** 201-264 (Oct.) 1936

Trigeminal Neuralgia: Review. J. E. Paterson.—p. 201.
Urea Clearance Test of Van Slyke. G. L. Montgomery.—p. 212.
Smooth Muscle Tumors of Prostate: Report of Three Cases with Mention of Similar Growths of Bladder and Epididymis. J. F. Heggie.—p. 223.

## Indian Medical Gazette, Calcutta

**71:** 501-564 (Sept.) 1936

Experience with Cancer of Larynx, Pharynx and Adjoining Regions. V. M. Kaikini.—p. 501.
Infantile Eczema. G. Panja.—p. 506.
Enteric Fever in Vizagapatam. N. G. Pandalai.—p. 511.
*Vaccine Treatment of Typhoid. C. Krishnaswamy Rau and M. P. Krishna Rao.—p. 513.
Sodium Mandelate in Treatment of Baoillus Coli Infection. P. Ganguli.—p. 516.
X-Ray Appearances Seen Twenty-Four Years After Healing in Case of Extensive Tuberculosis of Lung. G. C. Chatterjee.—p. 517.
Dermal Leishmaniasis in China. Y. T. Yao and C. Jung Sun.—p. 519.
Experimental Studies on Atabrine. F. Mietzsch, H. Mauss and G. Hecht.—p. 521.

**Vaccine Treatment of Typhoid.**—Krishnaswamy Rau and Krishna Rao state that they have recorded as high as 84 per cent of success in cases in which intravenous triple vaccine was started in the first week of illness. On the other hand in late second week cases, when the patient is in a state of toxemia with signs of toxic myocarditis, they hesitate to give triple vaccine intravenously for the obvious reason that the shock produced might be followed by unfavorable results. In such cases they prefer giving the vaccine intramuscularly; some respond well, others do not show much reaction. This explains the lower percentage of success in their series of second week cases. Thus triple vaccine given intramuscularly has its own advantage and it is not too much to infer that it presents complications both early and late, clears the toxemic condition quickly, improves the general condition of the patient and brings about a modification in the range of temperature, though it may not cut short the course of the fever in all cases. The average adult dose varied from 50 to 100 million organisms intravenously and from 100 to 200 million organisms intramuscularly. The dose usually employed in children between 8 and 12 years of age is 50 million organisms intravenously. The dose and the route of administration have to be determined in each case by taking into consideration the degree of toxemia, the day of the disease, the condition of the myocardium, the temperature, the age and the general condition of the patient.

## Journal of Laryngology and Otology, London

**51:** 619-682 (Oct.) 1936

Report on 891 Consecutive Cases of Acute Middle Ear Suppuration and Mastoiditis with Intracranial Complications in 139 Cases During the Period 1920-1934. J. S. Fraser and G. C. Halliday.—p. 619.
Some Remarks on Suppuration in Parapharyngeal Space. R. Schroeder.—p. 631.

## Journal of Mental Science, London

**82:** 291-474 (July) 1936

*Bodily Complaint: Study of Hypochondriasis. F. Brown.—p. 295.
Memory and Its Disorders in Relation to Crime. H. A. Grierson.—p. 360.
*Hematology of Convulsions. A. Guirdham.—p. 371.
Superficial Abdominal Reflexes. E. F. Skinner.—p. 394.
Serum Calcium in Prolonged Narcosis. T. J. Hennelly and E. D. Yates.—p. 411.
Narco-Analysis. J. S. Horsley.—p. 416.
Somnifaine Narcosis: Clinical Aspects. A. MacNiven.—p. 423.
Id.: Psychologic Aspects. J. H. MacDonald.—p. 429.
Id.: Biochemistry. J. H. Quastel.—p. 431.
Id.: Pathology. W. M. F. Robertson.—p. 433.

**Study of Hypochondriasis.**—Brown regards hypochondriasis as a reaction of the individual to a difficulty rather than as a disease. The incidence of body complaints in the 226 admissions in 1934 to the Phipps Clinic was 45 per cent. The nature and etiology of the body complaints is discussed in forty-one cases showing hypochondriasis in anxiety and obsessional states, hysteria, invalid, schizophrenic and depressive reactions. These body complaints were classified mainly on a basis of affect and attitude to illness into psychoneurotic or merergasic hypochondriasis, schizophrenic or parergasic types of hypochondriasis and depressive hypochondriasis. A great difficulty of this problem lies in defining the meaning of the emotional states, such as depression, anxiety, fear and tension, and in deciding what are the physical accompaniments. It is probable that the body complaints in all these conditions are related, and some kind of classification is necessary to understand and treat the psychogenic body complaint, which seems to have as many ramifications and complexities as the physical body complaints, which are the province of organic medicine.

**Hematology of Convulsions.**—Guirdham studied the hematology of eight epileptic patients and two control subjects. The individual observations were continued for a period of from twenty-one to sixty-four days. A definite hemocytic variation was observed with the incidence of the convulsions. It is not, however, uniform in tendency in all cases, which seems to indicate that there are characteristic pathologic variations for epileptic patients but not for epilepsy. The white cell count is markedly variable in epilepsy, its greatest variability being at the time of the convulsion. There is a definite leukocytosis associated with the occurrence of fits. It is due, in practically all cases, to a relative increase in the lymphocytes. Eosinophilia, traditionally associated with epileptic convulsions, occurred but rarely. Eosinophilia is found in that minority of cases in which the increased white count, associated with fits, is due to the polymorphonuclears. When fits occur in

groups, there is a tendency for a low count to be associated with a period of fits. The red cell count and hemoglobin percentages vary, in association with the convulsions, but to a less degree than the leukocytes. There is an increase in the erythrocyte count at the time of the fits. This may or may not be accompanied by an increase in the hemoglobin percentage. There appears to be no very definite relation between the type of cell count and the degree of frequency of the fits. No real evidence of a daily leukocyte tide was afforded by a study of the control subjects, or of the epileptic patients in a quiescent phase.

## Journal of Physiology, London

**87:** 311-428 (Sept. 8) 1936

Limiting Rate of Assimilation of Glucose Introduced Intravenously at Constant Speed in Resting Dog. M. Wierzuchowski.—p. 311.
*Normal Leukocyte Picture in Hot Climate. W. P. Kennedy and I. Mackay.—p. 336.
Heart Rate of Sympathectomized Dog in Rest and Exercise. L. Brouha, W. B. Cannon and D. B. Dill.—p. 345.
Rôle of Duodenal Regurgitation in Automatic Regulation of Gastric Acidity. C. Bolton and G. W. Goodhart.—p. 360.
Maternal Transference of Fluorine. Margaret M. Murray.—p. 388.
Reactions of Normal Mammalian Muscle to Acetylcholine and to Eserine. G. L. Brown, H. H. Dale and W. Feldberg.—p. 394.
Antagonism Between Curarine and Acetylcholine. Grace Briscoe.——p. 425.

**Normal Leukocyte Picture in Hot Climate.**—Investigations of the polymorphonuclear count of European and indigenous populations in Irak showed a marked shift to the left. This directed the attention of Kennedy and Mackay to the differential count, and it was found that the blood picture in normal persons in Irak differed from the standards given in all the textbooks of tropical medicine available to them. These, indeed, were similar to the figures found in the best known manuals of histology, pathology and medicine. Physiologic standards were necessary for the furtherance of other researches. Differential white cell counts and polymorphonuclear indexes of 271 British airmen and twenty-nine Irak medical students, under subtropical conditions, are presented and analyzed. Evidence of bone marrow stimulation appears to be afforded by deviation of the polymorphonuclear count, the frequency of "abnormal" cells and the high total count. A left-handed polymorphonuclear index could result from increased removal from the circulation, and this is probably a factor, but there is no evidence that it is operating alone. If it did, an unstable state would result, and on the contrary an equilibrium was demonstrated by the similarity of repeated counts in random individuals, the absence of double maximums in any count and the nonoccurrence of leukopenia. The very high figures obtained for monocytes indicate that these cells are more sensitive to the hematopoietic stimulus at work than the granulocyte series or that they are more resistant to the probable increased removal of white cells from the blood stream, or both. In certain pathologic conditions, e. g., phlebotomus fever, much higher monocyte counts were found. The possible causes are discussed, and it is concluded that the climate is most probably responsible.

**88:** 1-112 (Oct. 16) 1936

Actions of Antidromic Impulses on Ganglion Cells. J. C. Eccles.—p. 1.
Carbamino Compounds of Carbon Dioxide with Human Hemoglobin and Their Rôle in Transport of Carbon Dioxide. J. K. W. Ferguson.—p. 40.
Genesis of Respiratory Movements in Fetus of Sheep. J. Barcroft and D. H. Barron.—p. 56.
*Dietary Deficiency, Nerve Lesions and Dental Tissues. J. D. King.—p. 62.
Double Motor Innervation of Adductor Muscle in Claw of Crayfish. A. van Harreveld and C. A. G. Wiersma.—p. 78.
Action of Progesterone on Uterus of Rabbit and Its Antagonism by Estrone. J. M. Robson.—p. 100.

**Dietary Deficiency, Nerve Lesions and Dental Tissues.**—King compared the effects of resection of certain nerves with those due to vitamin A deficiency. The vasomotor system exerted an influence on the growth of the teeth. In dogs receiving diets deficient in vitamin A the eruption of teeth was delayed, hypercementosis occurred and the laminae durae and bone of the tooth sockets were malformed and the alinement of the incisor teeth was irregular, in addition to periodontal and nervous defects. When the inferior dental nerve was resected on one side, the eruption of teeth in dogs and the growth of teeth in rabbits was accelerated and the alinement of the incisor teeth was irregular; but no defects in the dental or periodontal tissues were found. As similar changes were observed on resection of the cervical sympathetic, the effects of severing the inferior dental nerve are regarded as due to damage to vasomotor fibers in it.

## Journal of State Medicine, London

**44:** 497-558 (Sept.) 1936

Classification of Rheumatic Diseases. A. G. T. Fisher.—p. 497.
*The Spa in Treatment of Rheumatic Diseases. C. W. Buckley.—p. 508.
Treatment of Chronic Rheumatism in the Town Clinic. W. S. C. Copeman.—p. 517.
Organization of Clinic for Chronic Rheumatism. T. J. O'Reilly.—p. 521.
Inspection of Canned Foods. C. White.—p. 530.
Demonstration of Tubercle Bacilli in Milk by Cultural Method. T. Ruddock-West and F. T. Alpe.—p. 543.
Differentiation of Coli and Aerogenes Group of Coliform Organisms. R. G. Harry.—p. 546.

**The Spa in Treatment of Rheumatic Diseases.**—Buckley points out that one of the most important features of treatment at a spa, whether in a hospital or privately, is the combination of rest and recreation in health-giving climates and attractive surroundings. This is of the utmost importance, which must always give to the spas advantages over treatment in large centers of population. Some consideration must be given to the difference in the effect of the various mineral waters. The analysis of a water throws but little light on its therapeutic action and one must depend largely on clinical observation supplemented by the work of the biochemist. The effect of a course of mineral water drinking may be due to purgation, cleansing the intestinal tract and removing toxins: this will be the effect of the strong sulfur and saline waters; to diuresis associated with flushing of the tissues generally or, perhaps vaguely, to stimulation of metabolism, of which there is both clinical and experimental evidence. In most rheumatic conditions, however, the external use of water in the form of baths, douches and other methods is generally considered to be the more important. The effects are due to thermal, mechanical and chemical action. Thermal effects will be the same whatever the character of the water employed and will influence rheumatic conditions by improving the flow of blood especially in the cutaneous vessels and at the periphery. Mechanical effects, while produced equally by plain water when used for douches, will in baths depend on the nature of the water, the strongly saline and the gaseous waters producing definite effects peculiar to themselves, and these merge with the chemical effects. Physical treatment, of which spa methods are one of the principal forms, must always be of the utmost importance in the treatment of rheumatic diseases.

## Journal of Tropical Medicine and Hygiene, London

**39:** 221-232 (Oct. 1) 1936

Immunization Against Trypanosomiasis: Third Contribution. C. Schilling.—p. 221.
Medical Organization and Health of Italian Troops During Ethiopian War: Notes. A. Castellani.—p. 222.

## Lancet, London

**2:** 775-832 (Oct. 3) 1936

Development of Thoracic Surgery. F. Sauerbruch.—p. 775.
*Botulism: Case. R. S. Aitken, B. Barling and A. A. Miles.—p. 780.
*"Specific" and Nonspecific Treatment of Boils, with Especial Reference to Results of Treatment by Staphylococcus Toxoid. R. Klaber.—p. 784.
Palpitation. Doris M. Baker.—p. 787.
Idiopathic Steatorrhea with Multiple Nutritional Deficiencies: Case. H. W. Fullerton and J. A. Innes.—p. 790.

**Botulism.**—In the case of Aitken and his associates bacteriologic examination of the suspected food—an open meat pie—confirmed the diagnosis and yielded a strain of Clostridium botulinum producing a type B toxin. This is the first recorded instance of a type B strain producing botulism in England. The potency of the toxin it produced in the pie was evidently high. The strain grows poorly and is feebly proteolytic and saccharolytic. Its anaerobic growth is greatly improved by the addition of 10 per cent carbon dioxide to the atmosphere in the jar, and it is suggested that incubation in this atmosphere be included in the routine procedure for the isolation of Clostridium botulinum. The type B strain isolated is

toxinogenic in relatively dry mincemeat, exposed even more freely to air, without the aid of symbiotic aerobes that is usually postulated as a necessary factor in the aerobic growth of Clostridium botulinum under domestic conditions.

**"Specific" and Nonspecific Treatment of Boils.**—Klaber asserts that the continued recurrence of boils is dependent in most cases on underlying factors. Treatment directed toward the removal of such conditions is therefore not only rational but usually highly successful. It consists of the removal of local sources of mechanical friction and secondary reinfection (hot fomentations, mechanical appliances, infected clothing), the removal of substances obstructing the opening of the follicles (dirt, oil, acne comedones), the treatment of septic foci (dental abscess, antral infection), the treatment of underlying cutaneous disorders (acne vulgaris, seborrhea, lichen urticata, eczema, scabies, pediculosis, pruritus) and the treatment, when present, of hyperglycemia, anemia, malnutrition and the like. Some cases appear to be associated with anxiety or "overwork." It is often impossible to separate the physical and psychologic factors concerned. Increased fresh air and sunshine or a long holiday may be followed by remissions. So many cases, however, improve following general ultraviolet irradiation that it seems probable that the immunity of the skin to the staphylococcus is in some way increased by the treatment. Roentgen treatment is of great value in the case of axillary boils and those confined to the face, neck and other areas commonly affected by acne vulgaris. This is the most reliable method of diminishing the excessive sebaceous and horny secretions responsible for these conditions. The retention of these products in the follicles invites recurrent infection by the staphylococcus. The virtue of any "specific" treatment for recurrent boils is peculiarly difficult to assess, owing to the irregular character of this affliction. The reinvestigation of seventy-nine cases treated by nonspecific methods (especially general ultraviolet irradiation and x-rays) from two to three years earlier indicated serious persistence in only three cases, in which there was an underlying chronic skin disorder. The results obtained by the use of toxoid in twenty cases of sycosis and thirteen cases of boils were not sufficiently encouraging to justify a continued trial. The injection of staphylococcus toxoid constantly increased the circulating antihemolysin. There was no evidence, however, that this increase had any clinical value.

## Medical Journal of Australia, Sydney

**2:** 381-414 (Sept. 19) 1936

Intracranial Aneurysms. E. G. Robertson.—p. 381.
*Observations on Metabolism of Calcium and Phosphorus in Three Cases of Acromegaly, One Showing Osteoporosis. L. B. Cox and Isobel M. McPhee.—p. 390.
Inductotherm. E. P. Dark.—p. 397.

**Metabolism of Calcium and Phosphorus in Acromegaly.**—Cox and McPhee observed no disturbance in the metabolism of calcium or of phosphorus in three cases of acromegaly. Case 1 is advanced and almost certainly nonprogressive, showing a marked general osteoporosis and resembling the type encountered in certain cases of hyperparathyroidism. Case 2 is early and probably progressive, showing no osteoporosis. Case 3 is advanced and progressive, also showing no osteoporosis. The two advanced cases both show the usual bony changes of their disease in that the bones have increased in size, have widened by the laying down of new bone beneath the periosteum, and many new bony formations are present. In case 1 the bones, having attained the usual contour of those found in acromegaly, yet have undergone rarefaction. Thus the calvarium, which is much increased in width, is definitely rarefied and has not the density usual in acromegaly. The thickened cortices of the long bones have undergone a similar rarefaction, a process that has extended even to the osteophytes. Thus it is the progressive case which shows the usual increase in density of bone, while the nonprogressive case shows rarefaction. It is suggested that a deficiency of calcium in the diet may have resulted in a call being made on the bony tissues. A generalized decalcification of bone is known to occur in thyrotoxicosis. No evidence of thyrotoxicosis was observed. In the light of such knowledge as is possessed as to the causes of generalized osteoporosis, it would seem likely that the decalcification has resulted from some imbalance of the endocrine glands. The biochemical investigations do not support this interpretation. In view of the association of the parathyroid secretion with the mobilization of calcium, the possibility must be considered that in case 1 the parathyroids were overactive either intermittently or continuously and that this aberrant function could not be detected by the biochemical methods used. Furthermore it is possible that, while hyperfunction of the parathyroids may have been present during the progressive phase of the pituitary tumor, a normal state may have existed during the retrogression of the latter. Moreover, it cannot be dogmatically stated that the secretions of the pituitary and parathyroids are alone necessary for the mobilization of calcium. Knowledge of the exact chronic state in which calcium exists in the blood and tissue fluids is far from complete.

## Practitioner, London

**137:** 393-664 (Oct.) 1936

Medical Progress 1935-1936. M. Cassidy.—p. 393.
Surgical Progress 1935-1936. D. Wilkie.—p. 399.
Diseases of Alimentary Canal. A. F. Hurst.—p. 409.
Acute Abdominal Disease. V. Z. Cope.—p. 423.
Cardiovascular Disorders. W. Evans.—p. 441.
Diseases of Blood Forming Organs. J. F. Wilkinson.—p. 453.
Diseases of Lungs and Pleurae. M. Davidson.—p. 467.
Nervous Disorders. M. Critchley.—p. 477.
Psychologic Medicine. H. Devine.—p. 481.
Rheumatic Diseases. C. W. Buckley.—p. 491.
Tropical Diseases. N. H. Fairley.—p. 501.
Acute Infectious Diseases. W. Gunn.—p. 513.
Allergic Diseases. G. W. Bray.—p. 531.
Endocrine Disorders. H. Gardiner-Hill.—p. 545.
Obstetrics and Gynecology. D. MacLeod.—p. 554.
Diabetes Mellitus. O. Leyton.—p. 569.
Renal Disease. T. I. Bennett.—p. 576.
Inoperable Cancer. J. Hosford.—p. 581.
Ophthalmology. R. A. Greeves.—p. 589.
Otorhinolaryngology. V. E. Negus.—p. 596.
Orthopedic Surgery. E. W. H. Groves.—p. 609.
Diseases of Children. A. Moncrieff.—p. 619.
Anesthesia and Analgesia. F. B. Parsons.—p. 630.
General Practice: No. IV. Medical Ethics. C. O. Hawthorne.—p. 646.

## South African Medical Journal, Cape Town

**10:** 625-652 (Sept. 26) 1936

Trachoma Problems. D. J. Wood.—p. 629.
Early History of Medicine. L. Klein.—p. 633.
Virus of Muscular Rheumatism. H. Husserl.—p. 636.
Retroflexion of Uterus. L. J. te Groen.—p. 637.
Impressions on Visiting Dermatologic Clinics in London and Vienna. L. E. Ellis.—p. 639.

## Tubercle, London

**18:** 1-48 (Oct.) 1936

Clinical Treatment and After-Care. W. Bronkhorst.—p. 1.
The Potts Memorial Hospital, Livingston, New York. H. A. Pattison.—p. 9.
Blood Hydrogen Ion Concentration Values of Normal and Tuberculous Rabbits. Cecilia Shiskin.—p. 14.
*Tuberculin Purified Protein Derivative in Treatment of Tuberculosis. B. C. Thompson.—p. 27.

**Tuberculin Purified Protein Derivative in Treatment of Tuberculosis.**—Thompson used tuberculin purified protein derivative in fifty-four cases of cervical gland tuberculosis and obtained improvement in thirty-two cases. In thirteen cases there was considerable reduction in the size of the glands, in ten cases there was great reduction, and in nine cases the glands were almost impalpable. These results are not necessarily permanent: nine of these patients are still under treatment, but their present state indicates a tendency to improve rather than otherwise. No improvement was produced in eighteen cases, in ten of which the disease went on to abscess formation and in two others, after temporary reduction in size, extended to other adjacent glands. In four cases purified protein derivative treatment was abandoned, owing to refusal of further injections or neglect of attendance by the patient. These results compare unfavorably with a series published previously of forty-two cases of cervical gland tuberculosis treated with Beraneck's tuberculin. Of the latter, thirty-two cases which came under treatment prior to gross caseation improved or became arrested over a long period. Though the results in the earlier stages were significantly better than those in the present series, local reactions were usually less severe and general reactions seldom occurred, therapeutic effect being obtained at a lower level of dosage. This suggests that the power to produce focal reaction, on which therapeutic value partly depends, is relatively

higher in Beraneck's tuberculin than in tuberculin purified protein derivative, and that purified protein derivative used as an intradermal test should be safer than old tuberculin as regards the possibility of lighting up latent tuberculous foci.

## Japanese Journal of Experimental Medicine, Tokyo

**14:** 311-456 (Aug. 20) 1936

Subcutaneous Vaccination by Means of Purified Vaccine Virus. H. Yaoi.—p. 311.

*Natural and Immune Antitoxin of Diphtheria in the New-Born and Sucklings. M. Magara.—p. 355.

Studies on Serodiagnosis of Tuberculosis by Complement Fixation Reaction: I. Concerning Antigen Accomplished with Mixture of Ovolecithin and Filtrate of Tubercle Bacillus Cultures Grown on Synthetic Medium. Y. Takeda and T. Sugai.—p. 371.

Id.: II. Concerning Our Improved Antigen. Y. Takeda and T. Sugai.—p. 375.

Id.: III. Concerning Results of Complement Fixation Reaction with Our Improved Antigen Done for Serums of Various Forms of Tuberculosis, Syphilis and Leprosy, and Especial Reference to Reaction and Process of Tuberculosis. T. Sugai.—p. 381.

Study on Classification of Hemolytic Streptococci and Their Rôle in Puerperium. M. Magara, K. Azuhata and Y. Koshino.—p. 387.

Demonstration of Cytoplasmic Inclusions in Lesions of Inguinal Granulomatosis: Preliminary Note. K. Ishimitsu.—p. 391.

Influence of Inorganic Reducing Substances on Experimental Tuberculosis. K. Yanagisawa.—p. 395.

Modifications of the Constitution of the Circulating Blood of the Rabbit Following Injection of Anti-Bone Marrow Serum. K. Kanazawa and S. Nakagami.—p. 453.

**Diphtheria Antitoxin in the New-Born.**—Magara states that antitoxin of diphtheria is transmitted to the embryo through the placenta, and therefore approximately 73 per cent of the new-born infants are inherently immune from diphtheria. But since the antitoxin in the blood of sucklings disappears rapidly, not all the sucklings are immune to diphtheria during the first six months after birth, as it has been believed. The injection of anatoxin into new-born infants is not sufficient, because they respond feebly to its injection. When pregnant women are given the injection of anatoxin, even a small amount of anatoxin causes antitoxin to increase to a much higher degree than in normal women, without any accompanying accessory reaction, and in addition the antitoxin in the blood of mothers is transmitted to the embryo through the placenta in almost the same quantity. Because even in those pregnant women who had no antitoxin before injection, antitoxin definitely appears with two courses of immunization through the injection of anatoxin given at monthly intervals, the offspring born of immunized mothers are highly immune from diphtheria. In spite of the fact that their antitoxin is of a passive nature, it lasts over a comparatively long period because it is constantly supplemented by the antitoxin contained in milk and completely protects such infants from diphtheria for at least half a year to a whole year after birth. The antitoxin in the blood of such mothers remains unreduced for half a year and therefore immunizes the next offspring born within one or two years. Pregnant women who are immunized with anatoxin secrete from 0.01 to 0.02 unit of antitoxin into their milk continuously for more than six months.

## Journal of Oriental Med., Dairen, South Manchuria

**25:** 33-48 (Aug.) 1936

Cow's Milk in Manchuria and Mongolia: Part VI. Reducing Substances, Especially Ascorbic Acid and Glutathione. M. Sugiura.—p. 33.

Id.: Part VII. Distribution of Amino Acids: No. I. Cystine. M. Sugiura.—p. 35.

Distribution of Kala-Azar in District of Mukden-Shanhaikwan Line in Manchukuo. M. Yosezato.—p. 36.

Ascorbic Acid Content of Manchuria Paprika (Capsicum Annum L. var. Grossum Sendt). M. Sugiura.—p. 37.

Experimental Studies of "Ultravirus" of Tubercle, Rat-Leprosy and Saprophytic Acid-Fast Bacilli. K. Urabe.—p. 38.

Experiments on Cultivations of Non-Acid-Fast Bacteria from Tubercle Bacilli and Saprophytic Acid-Fast Bacteria. K. Urabe.—p. 39.

Study on Inflammation of Perichondrium of Pinna Caused by Bacilli of Green Pus (Bacillus Pyocyaneus): Part I. Experiments on Unimmunized Rabbits. A. Arai.—p. 40.

Statistical Observations on Teeth in Chinese, with Especial Consideration of the Differences in Race. T. Hosaka.—p. 41.

Investigation on Influence of Aerial Circuit on Bacteria: I. Influence of Aerial Electrode, Earthed Electrode, and Combined Electrode on Growth of Bacteria. M. Ommyoji.—p. 43.

Id.: II. Influence of Earthed Electrode on Potential of Bacteria Culture. M. Ommyoji.—p. 44.

Id.: III. Long Period Observations on Influence of Earthed Electrode on Growth of Bacteria and Potential of Bacteria Culture. M. Ommyoji.—p. 45.

Studies on Kaschin-Beck's Disease. T. Yamanaka.—p. 46.

## Presse Médicale, Paris

**44:** 1577-1600 (Oct. 10) 1936

Galactose Concentrations in Diagnosis of Obstructive Jaundice. M. Chiray and G. Albot.—p. 1578.

Problems of Abortive Tuberculosis. P. Ameuille, E. Kudelski and C. Kudelski.—p. 1580.

*Sulfamides in Treatment of Erysipelas. H. Bloch-Michel, M. Conte and P. Durel.—p. 1583.

Roentgenographic Study of Internal Expansion of Right Lung. J. Stephani and R. Kirsch.—p. 1585.

Aponeurotic Autoplasties in Surgical Cure of Enormous or Recurrent Hernias. J. Gosset.—p. 1586.

**Sulfamides in Treatment of Erysipelas.**—Bloch-Michel and his co-workers studied the effect of para-amino-benzene sulfamide on mice infected with virulent hemolytic streptococci and on patients with erysipelas. With the mice, the effect was more marked when virulent strains were used; with strains of mild virulence, the effect was almost absent. However, the results with mice were variable, depending on the virulence of the strains, the quantity of germs inoculated, the time that separated the inoculation from the treatment and the mode of treatment itself. None of the treated animals were immunized; the survivors were just as sensitive to subsequent streptococcic infection as previously. The clinical observations were made on 250 patients with erysipelas. Treatment of most of these with sulfamide derivatives certainly modified the evolution of this disease. The action was particularly good on the temperature and on the erysipelatous plaques. Furthermore, sulfamides given at the onset of the erysipelas seemed to diminish the number of complications but had no action on the suppurations once they became established.

**44:** 1601-1624 (Oct. 14) 1936

Simultaneous Observations of Pulse, Respiration and Electrocardiogram on Indian Yogis. C. Laubry and Mlle. Thérèse Brosse.—p. 1601.

Mortality from Diphtheria. M. Moine.—p. 1604.

*Rational Treatment of Epilepsy. C. Adler.—p. 1607.

**Treatment of Epilepsy.**—Adler describes a method of treatment which he believes is satisfactorily based on the most plausible theory of the pathogenesis of epilepsy. It consists in the use of one or more barbital derivatives combined with caffeine in small and divided doses. These can be continued for long periods without injurious results, and it is best by gradual increase to determine the optimal dose for complete elimination of epileptic manifestations. Some variation in the time of administration of the fractional doses may be introduced, depending on the usual time of origin of epileptic attacks. By this means it is possible to inhibit completely the so-called epileptic center and to avoid all secondary manifestations in a person suffering from chronic epilepsy. This inhibition can be definitely maintained without further treatment in about 12 per cent of the patients. The only plausible hypothesis explaining this, according to the author, is that the "epileptic center," if maintained for a sufficiently long time (from eight to fifteen months) under the influence which inhibits it, eventually develops a new habit which prevents it from continuing to react to the cause or causes which previously influenced it.

## Schweizerische medizinische Wochenschrift, Basel

**66:** 1105-1152 (Nov. 14) 1936. Partial Index

*Medication with Vitamin A in Hyperthyroidism. I. Abelin.—p. 1106.

Genital Hemorrhages During Last Months of Pregnancy. A. Couvelaire.—p. 1116.

*Spontaneous Change of Sex in Hermaphrodite. J. Halban.—p. 1130.

*When and How Should Physician Prescribe Ecbolics. P. Hüssy.—p. 1134.

Technic of Closure of High Vesicovaginal Fistulas. E. Jaeggy.—p. 1136.

*Therapy of Habitual Abortion. P. Jung.—p. 1137.

Treatment of Puerperal Fever. H. Knaus.—p. 1141.

**Medication with Vitamin A in Hyperthyroidism.**—Abelin directs attention to experimental studies on the effects of the vitamins on hyperthyroidism, particularly the experimentally demonstrated antagonism between vitamin A and thyroxine. The discovery of this antagonism led to studies on the vitamin A supply of patients with hyperthyroidism and also to the therapeutic application of vitamin A in hyperthyroidism. He mentions several vitamin preparations and then takes up the question of the auxiliary treatment, pointing out that vitamin A is a good adjuvant in the medication with iodine and with diiodotyrosine in that it greatly lessens the "crisis"

and the temporary exacerbations that ordinarily occur in these forms of medication. The author admits that a definite evaluation of vitamin A therapy in hyperthyroidism is not possible as yet.

**Spontaneous Change of Sex in Hermaphrodite.**—Halban relates the history of a true hermaphrodite with virile habitus, in whom a sex transformation toward the female habitus took place at the age of 30. The author is unable to give an explanation of the cause of this transformation, yet he thinks that the case has clinical significance, because it demonstrates the possibility of a spontaneous transformation of the sex of a hermaphrodite. He points out that this should be kept in mind in case of reports about sex transformations of hermaphrodites by means of operations or of endocrine therapy.

**Use of Ecbolics.**—Hüssy warns that ecbolics should not be used (1) in case of a disproportion between fetus and pelvis, (2) in case of threatened rupture of the uterus and (3) in case of normal labor pains. During labor it is better to give small than large doses, for they are less dangerous and just as effective as the large ones. Ecbolics should be given only if the uterine contractions are too weak and too far apart. The author recommends chiefly quinine for the period of dilatation and solution of posterior pituitary for the period of expulsion. Ergot preparations should not be given during these two periods. During the after-birth period, ergot and posterior pituitary preparations should be given together. At this time the larger doses are not only permissible but advisable. In the course of abortions, quinine and pituitary preparations may be tried, provided the hemorrhage is not too severe. Ecbolics are not suited for inducing labor in a uterus not yet undergoing contractions.

**Therapy of Habitual Abortion.**—Jung followed Sellheim's suggestion to try serum from healthy pregnant women in the treatment of habitual abortion. Sellheim in turn had been induced to make this suggestion by Mayer's report (in 1910) about the possibility of curing pregnancy toxicoses by means of the injection of the serum of healthy pregnant women. Jung, instead of using the serum, decided to use the whole blood. He gives brief clinical histories of nine women, who had had from two to six abortions previous to the pregnancy during which they were given the injections. The histories indicate that 10 or 20 cc. of blood was given by intramuscular injection at intervals of from two to six weeks. Others give the injection at shorter intervals (four or five days). The total number of injections varied in the different cases. Occasionally, when pregnancy blood was not available, progestin was injected instead. The author emphasizes that this treatment cannot be expected to be successful in all cases of repeated abortions. He employed it only in cases of obscure etiology in which definite causes could not be found. The case histories indicate that it was successful in nearly all cases.

## Archivio per le Scienze Mediche, Turin

**62:** 347-474 (Oct.) 1936

Chlorine Contained in Gastric Secretion Obtained by Sounding. A. Allodi and M. Cerati.—p. 347.
Intussusception of Small Intestine by Benign Tumors: Case. G. Capitolo.—p. 393.
Action of Prehypophyseal Extracts in Passive Hyperthermia. S. Fiandaca.—p. 413.
Distribution of Uric Acid in Plasm and Globules in Normal Blood. S. Battistini and F. Quaglia.—p. 437.
*Gastric Secretion in Liver Diseases. F. Quaglia.—p. 457.

**Gastric Secretion in Liver Diseases.**—Quaglia reports the results of examinations on the gastric secretory functions and on the behavior of the gastric chemistry in 386 cases of liver and biliary diseases (cholelithiasis, cholecystitis, angiocholitis and cirrhosis). The author believes that achlorhydria and hypochlorhydria of different intensity, generally in association with a diminished gastric secretion, are found in liver and biliary diseases in 70 or 80 per cent of the cases. Normal chlorhydria and hyperchlorhydria are rare. The latter depends on the coexistence of gastric ulcer or duodenitis. The mechanism that induces the gastric functional or anatomic lesions which cause achlorhydria and hypochlorhydria is unknown. Its origin is related to different factors, such as diet, infection, disturbance of the acid-base equilibrium between the gastric secretion and the bile and a dysfunction of the sympathetic nervous system.

## Ginecologia, Turin

**2:** 907-1022 (Oct.) 1936. Partial Index

*Renal Threshold in Normal Pregnancy. G. Addessi.—p. 907.
Iodine in Blood in Relation to Functions of Thyroid in Pregnancy. E. Berutti.—p. 925.
Cytologic Examination of Vaginal Secretion in Puerperium: Medicolegal Importance. M. Nizza.—p. 959.
Nupercaine Spinal Anesthesia in Gynecology. V. Silvestrini.—p. 976.
Reaction of Ovary of Rabbit Transplanted After Treatment with Gonadotropic Substances. M. Nizza and E. Berutti.—p. 981.
Behavior of Lymphatic Vessels of Fallopian Pregnant Tube. A. Gusso.—p. 991.

**Renal Threshold in Normal Pregnancy.**—Addessi determined the renal threshold in normal pregnancy by testing the permeability of the kidney to dextrose in induced hyperglycemia. Especial care was taken that the women tested had normal kidneys. The threshold is lowered in the last half of pregnancy, as proved by the increased permeability of the kidney to dextrose in the test. The lowering of the renal threshold can take place in normal conditions. It is dependent on several factors, such as the secretory functions of the renal epithelium, the predominance of the vagal over the sympathetic tonus in the renal innervation, the influence of insulin secreted by the pancreas and the reaction of the kidney to hyperglycemia. In pregnancy the condition is caused by an increased tonus of the vagus in the segment that innervates the kidney. The vagal disturbance originates in the endocrine and sympathetic modifications that take place during pregnancy. If the vagal tonus is exaggerated, spontaneous glycosuria, without hyperglycemia, appears. If it is not exaggerated, the renal threshold decreases and the stimulation of induced hyperglycemia suffices to permit the passage of sugar from the blood to the urine.

## Prensa Médica Argentina, Buenos Aires

**23:** 2451-2494 (Oct. 28) 1936. Partial Index

*Mechanism of Action of Gastric Mucin. C. Bonorino Udaondo, H. Zunino and A. M. Centeno.—p. 2451.
Arteriovenous Aneurysm of Cavernous Sinus and of Internal Carotid Artery: Ligation of Internal Common Carotid Artery. A. Ceballos.—p. 2454.
Carcinoma of Neck of Uterus: Clinical and Therapeutic Study. A. J. Bengolea.—p. 2463.
Shock in Obstetrics and Gynecology. A. G. Peralta Ramos.—p. 2474.
Biliary Lithiasis. Teresa Malamud.—p. 2477.

**Action of Gastric Mucin.**—Bonorino Udaondo and his collaborators report the results of experiments made to verify the mechanism of action of gastric mucin in neutralizing gastric acidity. They tested, in vitro, the protective action of gastric mucus by its influence on pepsin, sodium hydroxide and hydrochloric acid. They found that a 1 per cent solution of gastric mucus (neutralized in diluted hydrochloric acid and an alcoholic solution of phenolphthalein) permits digestion of albumins (in an albumin solution) by pepsin. One cubic centimeter of a tenth normal solution of sodium hydroxide to which a small amount of gastric mucus in powder had been added required 0.93 cc. of tenth normal hydrochloric acid to be neutralized, thus showing that it fixed 0.7 cc. of sodium hydroxide in each cubic centimeter of the solution. The same amount of sodium hydroxide was fixed by gastric mucus in solution. Gastric mucus in powder did not cause fixation of hydrochloric acid. Gastric mucus in solution causes slight fixation of hydrochloric acid. The authors conclude that the protective action of gastric mucus fails in controlling the effects of pepsin and that gastric mucus acts as a buffer to alkalis and acids. The action of gastric mucus in protecting the gastric mucosa against chemical constituents of gastric secretion is of little value in comparison with its influence on physical factors.

## Deutsches Archiv für klinische Medizin, Berlin

**179:** 321-432 (Oct. 9) 1936. Partial Index

Interference Dissociation in Electrocardiogram. C. Korth and W. Schrumpf.—p. 321.
*Methemoglobinemia After Poisoning with Ethyl Nitrite. K.-A. Seggel.—p. 353.
Relation Between Specific Gravity and Composition of Urine. J. Weiser and H. Thelen.—p. 362.
*Abdominal Idiopathic Porphyria. H. Kämmerer and W. K. Meyer.—p. 392.
Investigations on Hypoglycemia Following Operations on Stomach. Magdalena W5hrle.—p. 411.

**Methemoglobinemia After Poisoning with Ethyl Nitrite.**—Seggel describes the symptomatology that developed in four workers who, for from forty-five to sixty seconds, were

exposed to the inhalation of ethyl nitrite. They were barely able to leave the room in which the gas was escaping, and they had severe dyspnea. Oxygen was given at once and the men were hospitalized. On arrival at the hospital, one hour after the poisoning, the skin and the mucous membranes of the patients showed a peculiar chocolate-brown to violet color. From the fact that the poisoning had been caused by a nitrite ester, it was assumed that a methemoglobin poisoning existed. The blood was tested for the presence of methemoglobin by a simple method which, although not exact, is nevertheless adequate for clinical purposes. The method, not hitherto used for the detection of methemoglobin, is based on the principle of the determination of the layer thickness, in which a certain line of absorption just disappears. On the first day the examination of the blood revealed methemoglobinemia, but on the second day it had disappeared. Methemoglobinuria was never observed. However, the development of a splenic tumor and an increase in the bilirubin content of the blood indicated a decomposition of the methemoglobin in the hepatolineal system. The relatively mild poisoning caused no lasting defects.

**Abdominal and Idiopathic Porphyria.**—Kämmerer and Meyer accept Micheli's classification of porphyrias into idiopathic and toxic forms. The idiopathic forms may become manifest with an abdominal, nervous or cutaneous symptomatology. The term idiopathic indicates the predominance of constitutional factors, whereas, in the toxic forms, infections or toxins play the chief part. The authors give their attention to the idiopathic form of porphyria in which the abdominal symptoms predominate. They describe the history of one case in which the daily quantity of urine contained 1,200 micrograms of coproporphyrin. Uroporphyrin was present only in traces. When the patient was given food that contained large amounts of blood pigment, the coproporphyrin content of the urine increased considerably; when a "porphyrin-free" diet was given, it decreased. It appears that protoporphyrin is absorbed in the intestine but that the liver fails to effect further decomposition and instead changes it to coproporphyrin. The authors think that a disturbance in a partial function of the liver is responsible for this. They assume that milder cases of a more or less isolated disturbance of the porphyrin metabolism are more frequent than has been believed and that they are usually accompanied by disturbances in the sympathetic nervous system. It appears that in such cases a greater intestinal putrefaction results in the formation of more than average amounts of porphyrin, which in turn represent an excessive load for a deficiently functioning liver. Restriction of foods containing large amounts of blood pigment and regulation of the intestinal function are the chief therapeutic requirements in these cases.

## Deutsche Zeitschrift für Chirurgie, Berlin

**247:** 411-554 (Sept. 7) 1936. Partial Index

*Respiratory Pyelogram. O. Hilgenfeldt.—p. 411.
*Gastric and Duodenal Perforation in Course of Roentgenologic Examination with Contrast Material. H. R. Paas.—p. 461.
Spontaneous Drainage of Purulent Mediastinitis into Perforated Esophagus. H. R. Paas.—p. 495.
Symptomatology and Pathology of Benign Tumors of Tendon Sheath: Xanthomatous Giant Cell Tumor. M. Zumtobel.—p. 501.
Extrarenal, Retroperitoneal Tumors. K. von Ferstel.—p. 517.
Treatment of Facial Furuncle. Helene Soest.—p. 526.

**Respiratory Pyelogram.**—According to Hilgenfeldt, the respiratory excursion of the kidneys may be demonstrated and measured by means of pyelograms taken from a patient in recumbent posture on complete expiration and inspiration. A single or two separate plates are sufficient. The author presents the respiratory pyelogram as a new diagnostic method in urology. He found the method valuable in (1) the diagnosis of pelvic and ureteral stones, particularly in differentiating shadows of other than calculous origin; (2) in localization of foreign bodies; (3) in recognition or differentiation of inflammatory conditions of the kidney and of the renal fossa, in paranephric abscess, woody phlegmon, renal carbuncle and pyelonephritis, and (4) in determining the relation of the renal fossa to neighboring inflammatory states, such as pancreatitis, appendicitis or tuberculosis. The alteration in renal excursion, however, is only a symptom to be interpreted along with other clinical and urologic investigations. It may be of aid in a difficult diagnosis of renal disease, it may furnish supporting evidence or, on the other hand, it may aid in ruling out kidney involvement.

**Gastroduodenal Perforation.**—Paas reports from von Haberer's clinic a case of a duodenal ulcer perforation and one of a gastric ulcer perforation, occurring in the course of a roentgenologic examination with the aid of a contrast meal. The cause of perforation, he believes, is the overloading of the stomach with the contrast meal, the increased motor activity with the contractions of the longitudinal and the circular muscle fibers bringing about the rupture of the thinned out wall. He believes that manipulation of the abdominal wall plays a subordinate part in the rupture. He had observed a prolonged pyloric spasm in dogs in which he had produced an artificial tear in the anterior duodenal wall close to the pylorus. This spasm lasted for several hours and prevented the passage of the gastric contents into the duodenum and from there into the preperitoneal cavity. It required the administration of large amounts of the meal and the production of a large tear in the anterior wall of the duodenum to bring about the effusion of considerable amounts of the meal into the free peritoneal cavity in the course of the first few hours. This fact explains the better prognosis of the duodenal perforation after administration of a contrast meal as compared with that of perforation of a gastric ulcer. Injection of from 50 to 140 cc. of barium sulfate in the peritoneal cavity caused death within twenty hours in the ten dogs experimented on. Death was due not to bacterial action but to the extremely severe irritating effect of the barium on the viscera and the splanchnic nerves. Late roentgenologic examination and histologic studies demonstrated that the barium sulfate was not being absorbed from the peritoneal cavity. The early and late histologic appearances of the liver, spleen, kidneys, stomach, intestine, omentum, mesentery and abdominal wall presented a typical picture of a connective tissue encapsulation process of a nonabsorbable foreign body. The process was limited to the superficial broad surfaces of the viscera. The parenchyma did not present any pathologic alterations in late studies. The author makes the following therapeutic suggestions: (1) thorough removal of the still nonadherent barium sulfate in the course of operation, (2) simple suture of the perforation in the presence of a considerable escape of the contrast material into the free peritoneal cavity and (3) prophylactic support of the peripheral circulation.

## Klinische Wochenschrift, Berlin

**15:** 1505-1544 (Oct. 17) 1936. Partial Index

*Treatment of Diphtheria with Cevitamic Acid. H. Otto.—p. 1510.
Experimental Diphtheria Intoxication of Guinea-Pigs and Its Nonspecific Modification by Substances Produced in the Body Itself. H. Lotze and S. Thaddea.—p. 1512.
Action of Digitalis. S. Lauter and F. Schmitz.—p. 1515.
Pathogenesis of Gonococcic Arthritis, Endocarditis and Sepsis. O. Zimmermann-Meinzingen.—p. 1518.
*Further Cases of Pelger's Nuclear Anomaly. M. Alieff and R. Reckers.—p. 1522.

**Treatment of Diphtheria with Cevitamic Acid.**—Otto cites observations on the relations between diphtheria and the vitamin C reserves of the organism. He was induced to use cevitamic acid as an adjuvant in the treatment of diphtheria by the observation that patients with diphtheria eliminated extremely small amounts of vitamin C in the urine; that is, the administered vitamin C was retained and utilized by the organism that was under the influence of the diphtheria toxin. The retention was especially great when in cases of toxic diphtheria from 500 to 700 mg. of cevitamic acid was administered daily by intravenous injection. To obtain reliable information about the efficacy of cevitamic acid in diphtheria, the author made comparative studies in ninety-two cases treated from Jan. 1 to June 1, 1936. The treatment with diphtheria serum was the same in all cases, but forty-two were treated with cevitamic acid and fifty were not. Tabular reports indicate that the administration of the cevitamic acid made no difference as regards the time of disappearance of the diphtheric membrane and of the temperature, nor did it influence the number of complications and of fatalities. However, the author did observe that the cevitamic acid exerted a favorable influence on hemorrhages, particularly nosebleeds. This he ascribes to the fact that cevitamic acid reduces the permeability of the vessels, as is known also from its effect in essential thrombo-

penia and other forms of hemorrhagic diathesis. The author concludes that, if the retention of large amounts of cevitamic acid by diphtheria patients is interpreted as indicating a deficiency of the organism in this substance, its administration is justified up to the time of the disappearance of the membrane and particularly during the development of complications. However, a definite therapeutic value can be ascribed to it only in cases of diphtheric hemorrhages.

**Pelger's Nuclear Anomaly.**—Alieff and Reekers direct attention to the fact that Pelger in 1930 described two cases with a peculiar white blood picture. 1. There was a considerable shifting to the left and there were more staff cells than segmented cells. 2. The staff cells were all of uniform shape: regular forms, usually with a small curvature in the middle of one side. 3. The cells with the segmented nuclei showed a peculiar behavior. They consisted of two fragments that were connected by a thin thread. This behavior was noticeable in the neutrophil as well as in the eosinophil and basophil leukocytes. After citing several other investigators who observed cases with this form of nuclear anomaly, the authors state that they observed it in a patient with lupus of the face. All the members of this woman's family were examined and the anomaly was detected in thirteen persons, belonging to three generations. In discussing the genesis of this anomaly, the authors point out that opinions are still divided as to whether it is a purely constitutional anomaly or whether this blood picture occurs only in tuberculosis. Pelger himself assumed that this blood picture had a relationship with a clinically obscure tuberculosis. Another investigator considers this nuclear anomaly of a purely constitutional nature. However, the authors point out that the family anamnesis of the case analyzed by that investigator shows tuberculosis. That investigator assumed a transmission from the mother to the children, whereas other observers were able to trace transmission from the father. After citing several other opinions, the authors state that in the family studied by them there was considerable tuberculosis.

## Medizinische Klinik, Berlin

**32:** 1489-1520 (Oct. 30) 1936. Partial Index

*Hormone Regulation of Growth and Secretion of Mammary Glands. L. Herold.—p. 1489.
Anemias. E. Woenckhaus.—p. 1491.
Advantages and Limits of Roentgenologic Examination in Inflammatory Processes of the Middle Ear. W. Loepp.—p. 1496.
*Prodromal Angina in Measles. B. Dragišić.—p. 1498.
Symptomatology and Therapy of Thallium Poisoning. M. Heiman. —p. 1500.

**Hormone Regulation of Mammary Glands.**—Herold shows that during pregnancy the combined influence of the estrogenic and corpus luteum hormones prepare the mammary gland for lactation. However, these two hormones have merely a growth-promoting but not a lactogenic action. The building up of the mammary gland not only is the prerequisite for the elicitation of the milk secretion but also provides the basis for influencing the milk secretion by hormone action. Lactation is brought on by the action of the lactation hormone of the anterior lobe of the hypophysis. The author assumes that the expulsion of the fetus and of the placenta removes a blocking mechanism from the hypophysis so that the lactation hormone can be secreted. The blockage is produced by the hormones of the ovary, which, during pregnancy, are secreted by the placenta. The detection and purification of the lactation hormone makes it possible to modify the milk secretion by hormone action. Attempts have already been made to stimulate inadequate milk secretion by the administration of lactation hormone, but, although the results were encouraging, the limited hormone supply still restricts this form of therapy. Moreover, the inhibition of lactation, which thus far has been proved only in animal experiments, may eventually prove valuable in the suppression of undesired lactation, for instance in cases in which the fetus is not viable.

**Prodromal Angina in Measles.**—Dragišić cites reports from the literature and his own observations to demonstrate that the incubation period of measles is not as deficient in symptoms as is widely believed. In a children's clinic he had the opportunity to observe the period of incubation. In a considerable number of cases he observed an initial fever (twenty-four or forty-eight hours after the infection). This fever subsides, but a tonsillitis may develop either from eight to ten days before the development of the exanthem or, more often, from three to four days before. In the forty cases observed by the author, the tonsillitis was usually of the follicular type. In discussing the significance of the tonsillitis that occurs during the incubation period of measles the author states that it is not advisable to base the diagnosis of measles on it exclusively. Only if the epidemiologic conditions are known (in families, children's clinics and so on) may the premonitory tonsillitis be regarded as an indication of the approach of measles.

## Wiener klinische Wochenschrift, Vienna

**49:** 1329-1356 (Oct. 30) 1936. Partial Index

Theoretical and Practical Aspects of Tuberculin Therapy of Rheumatism. C. Reitter.—p. 1329.
Methods of Research on Human Heredity. Berta Aschner.—p. 1333.
*Hitherto Unnoticed Pancreatohepatic Syndrome Produced by Transition of Pancreatic Juice into Blood Stream. A. Edelmann.—p. 1336.
Antithyroid Action of Vitamin A. K. Fellinger and O. Hochstädt. —p. 1339.
*Bursitis Calcanea in Skaters. H. Kraus.—p. 1340.
Chronic Ulcerating Colitis in Thrombopenia: Case. A. Czabafy.—p. 1343.

**Pancreatohepatic Syndrome.**—Edelmann observed a number of patients with pancreatic disturbances in whom neurologic and dermatologic symptoms predominated. He reports one case that was under observation for months. The patient had abdominal symptoms that gave the impression of a cholecystopathy. A surgical intervention revealed a normal gallbladder, but the pancreas showed signs of chronic pancreatitis. The patient also developed a number of neurologic and psychiatric symptoms which indicated the presence of multiple foci (caused by toxins or ferments) in the brain and spinal cord. Moreover, a polyneuritis indicated involvement of the peripheral nerves. Then there were psychic disturbances of the type of Korsakoff's syndrome, and the examination of the vestibular apparatus disclosed a number of disturbances, such as failure to respond to caloric stimulation, attacks of vertigo, and disturbances in the equilibrium. The patient became extremely emaciated and he also had cutaneous disorders in the form of atrophy, diffuse gray pigmentation and follicular hyperkeratosis. In discussing this case the author emphasizes the necessity of differentiating between acute pancreatitis, with its fulminant manifestations and usually fatal outcome, and the chronic form in which the pancreatic juice may enter the blood stream, just as bile may enter the blood stream in case of disorders of the biliary system. Whether the pancreatic juice that enters the blood stream injures the central nervous system directly or by way of other organs, the author is unable to say; at any rate there seems to be a neurotropic and dermatotropic tendency. The author describes other cases of chronic pancreatitis and shows that in some of them the described syndrome is amenable to therapy; for instance, in cases of obstruction or stenosis of the pancreatic duct or in cases in which, as the result of pancreatic swelling after gastric or duodenal ulcer, a lymphangitis develops in the region of the head of the pancreas. He concludes that a knowledge of the syndrome here described has repeatedly proved helpful in the diagnosis of chronic pancreatic disturbances. Moreover, the passage of pancreatic juice into the blood stream may play a part in the pathogenesis of various syndromes of the central and peripheral nervous system.

**Bursitis Calcanea in Skaters.**—Kraus directs attention to a disorder that he observed in skaters, which could be traced to faulty shoes. It consists of a subcutaneous bursa on the calcaneus which develops as the result of pressure from the too greatly curved and stiffened heel portion of the skating shoe. The first symptoms usually appear shortly after new shoes have been used. Pains develop on the calcaneous, particularly at the attachment of the triceps surae. Examination reveals a pressure point on the calcaneus and in the later stages reddening and swelling of the skin in the painful area. In contradistinction to bursitis of the achilles tendon, the tendon is not painful. One of the chief factors in the therapy is the altering of the skating shoe. The stiffened and curved heel portion is removed and is replaced by a strip of soft leather 3 cm. in width. The painful area on the foot is protected by an adhesive bandage. After three or four days the patients are usually able to skate again.

## Sovetskiy Vrachebnyy Zhurnal, Leningrad

October 30, 1936 (No. 20) Pp. 1521-1600. Partial Index

Washing Out of Stomach and Duodenum as Therapeutic Method. N. A. Bukatko.—p. 1530.
*Short Wave Therapy. I. A. Piontkovskiy and G. L. Fabricant. —p. 1538.
*Use of Umbilical-Placental Blood for Massive Transfusions in Surgery. Ya. M. Bruskin and P. S. Farberova.—p. 1546.
Intravenous Methenamine Therapy in Dermatology. S. L. Lieberman and G. O. Suteev.—p. 1555.
Scarlatinal Otitis in Young Children. A. I. Ivanova.—p. 1559.

**Short Wave Therapy.**—According to Piontkovskiy and Fabricant, short wave therapy markedly altered the clinical course of acute local suppurative processes, such as furuncles, carbuncles, adenitis, phlegmons, panaritiums and mastitis. The most striking effect noted was the total disappearance or marked diminution of pain. The analgesic effect appeared to be superior to any obtained by physical therapeutic measures. There was rapid disappearance of the edema of the tissues surrounding the inflammatory focus and of the redness and immobility of the part involved. The treatments were followed as a rule by a fall in body temperature. The effect on the lesion was to accelerate the process of suppuration and absorption. One or two treatments frequently led to spontaneous opening and copious discharge of pus followed by rapid healing. Early application of short wave therapy frequently resulted in aborting the inflammatory process. The authors obtained their best results in cases of furuncles and carbuncles. Panaritiums and lymphadenitis required longer treatment, while the results in mastitis were negligible. All cases of phlegmon of the hand required surgical intervention. The authors warn against the use of a strong current in these cases, for fear that the heat created in the tissues may cause the inflammatory process to spread. The therapeutic effect of short waves did not seem to depend on the creation of heat within the tissues, since identical results are obtained with small doses incapable of producing the sensation of warmth. The authors likewise could not confirm the alleged bactericidal effect of the waves in their experiments in vitro. Observations on cultures of Staphylococcus pyogenes-aureus, Bacillus typhi-abdominalis and Bacillus subtilis failed to show any such effect. Smears and cultures from pus of carbuncles treated with short waves failed to demonstrate a bactericidal effect in spite of a favorable clinical course. The authors suppose that the favorable effect was due to the action of the waves on the host rather than on the microorganisms. The results in seventeen cases of chronic osteomyelitis were negligible. Of eleven patients suffering from polyarthritis, ten did not obtain any benefit from the treatment. As to the hazards of short wave therapy, the authors point out that, while it may be considered entirely safe in the hands of a trained physical therapist, the possibilities of a burn are greater than with diathermy.

**Umbilical-Placental Blood for Massive Transfusions.**—Because of a demand for blood transfusions in the surgical treatment of malignant neoplasms, Bruskin and Farberova of the Central Oncologic Institute of Moscow resorted to the use of blood obtained from the umbilical vein and the placenta of the new-born. They believe that fetal blood is particularly valuable because of its high immunobiologic antiblastic quality against neoplasms. The amount obtainable from one placenta varies between 50 and 120 cc. Bruskin demonstrated in dogs the safety of utilizing blood from several donors. The authors proved in their clinical work the safety of using a mixture of blood from several donors of the same group. In the last four months, 114 transfusions of umbilical-placental blood were performed at the institute and sixty at the lying-in hospital. Studies of the morphology and of the biochemical properties of placental blood demonstrated the high content of the important elements. The hemoglobin was found to vary from 90 to 120 per cent, red cells from 5,000,000 to 6,000,000, and leukocytes from 8,000 to 16,000 with a definite lymphocytosis (32 to 46 per cent). The reticulocytes varied from eleven to thirty in 1,000 cells. A number of authors believe that placental blood contains a number of hormones of ovarian and anterior pituitary origin. The blood was conserved for from six to ten days. The authors estimate that, of the 60,000 annual births in Moscow, 40,000 could be used for the purpose of collecting placental blood. An average of 50 cc. from each birth would yield 2,000 liters, or an amount sufficient for from 6,000 to 8,000 blood transfusions.

## Norsk Magasin for Lægevidenskapen, Oslo

**97:** 1001-1112 (Oct.) 1936

*Angina Pectoris: Contribution to Illumination of Pathogenesis and Anatomic Basis. A. Jervell.—p. 1001.
*Incarcerated Diaphragmatic Hernia. G. Røvig.—p. 1018.
*Pathology of Amyloid Kidney. R. Opsahl.—p. 1028.
Electrical Illumination of Projection at Distance of Five Meters from Charts for Keenness of Vision. S. Holth.—p. 1039.
Shoulder Delivery in Breech Presentation and New Method of Performing It. J. Løvset.—p. 1041.
Retrograde Pyelography in Upright Position. J. Stang.—p. 1049.

**Angina Pectoris.**—From his investigations, Jervell concludes that angina pectoris pain of the type of effort angina and the so-called status anginosus in cardiac infarct are closely related clinically and pathogenically. In status anginosus the basis is an absolute coronary insufficiency in a limited field, corresponding to acute coronary stenosis; in effort angina it is a relative coronary insufficiency manifested only under special conditions, as in physical exertion, the anatomic cause most often being a coronary stenosis. In both, only anatomic changes in the great coronary branches are to be considered. In cases of extensive coronary sclerosis not accompanied by angina pectoris, the blood supply for the entire myocardium is probably insufficient. The heart has to suspend its work after coronary circulation, the contraction ability diminishes, the minute volume becomes inadequate and symptoms of insufficiency appear, first of all dyspnea. There need be no actual ischemia of the myocardium. If, on the contrary, a particular coronary branch is stenosed while the coronary circulation is otherwise satisfactory, the insufficiently nourished part must follow the well nourished heart musculature in its reaction to increased demands. A local ischemia then results, causing symptoms of angina pectoris. This view of the pathogenesis of angina pectoris explains the presence of grave coronary sclerosis without angina pectoris and, conversely, the occurrence of violent attacks without extensive changes. The decisive factor is thus not the extent of the sclerosis but the extent to which it causes stenosis in one of the main branches, leading to a disproportion between the blood supply to the different parts of the heart.

**Incarcerated Diaphragmatic Hernia.**—Røvig describes the case of a woman, aged 38, who was operated on under the diagnosis of volvulus coli. There was an incarcerated diaphragmatic hernia of unusual size with abnormally long colon (macrocolon) as hernial content. He says that hernia and colon malformation were undoubtedly congenital. The hernial portal was a grave defect in the left side of the diaphragm corresponding to the foramen of Bochdaleck. A palliative intervention was indicated and after phrenic exeresis on the left side the transverse and descending colon were anastomized subphrenically. On after-examination about two and a half years later the patient had but slight subjective symptoms and was able to work. The roentgenogram showed satisfactory functioning of the anastomosis and, as before, a long colon loop in the left side of the thorax. In a certain reclining position the hernia was complicated by transposition of the stomach, duodenum and small intestine to the left side of the thorax, but spontaneous reposition occurred on shifting the position.

**Amyloid Kidney.**—Opsahl's first patient with subacute anhydropic form ending in uremic coma was a woman, aged 28, with a history of fistulous tuberculous coxitis which had healed with ankylosis and, fifteen years later, a cavernous pulmonary tuberculosis of rapid course. The second and third patients were a man, aged 31, and a woman, aged 36, who had bilateral autochthonous thrombosis of the renal veins without recognized clinical symptoms of a thrombosis. The basic disorder was a cavernous pulmonary tuberculosis with a course of at least two and six years, respectively. The fourth patient, a man, aged 40, who presented the picture of a lipoid nephrosis, had histologically diffuse degeneration and atrophy, considerable hypertrophy of the heart and no hypertension, finally hypotension, Addison coloration of the skin and marked amyloid deposits in the adrenal cortex and medulla. The basic disease was a chronic polyarthritis on a gonorrheal basis (without suppuration). The heart atrophy is regarded as the expression of an earlier arterial high tension, probably due to a diffuse glomerulus degeneration in the kidneys. The normal or subnormal pressure in the later course of the disturbance is attributed to adrenal insufficiency.